S6161-AQ-FSE-010

0910-LP-102-4800 **REVISION 1**

[*SGML Version - See Change Record*]
TECHNICAL MANUAL

OPERATION AND SERVICE LEVEL

SHIPBOARD POTATO SHAPER-FORMER

This publication supersedes all previous editions of: S6161-AQ-FSE-010/33443, 0910-LP-102-4800.

DISTRIBUTION STATEMENT E: DISTRIBUTION AUTHORIZED TO DOD COMPONENTS ONLY; CRITICAL TECHNOLOGY; DATE OF PUBLICATION. OTHER REQUESTS MUST BE PREFERRED TO THE NAVAL SEA SYSTEMS COMMAND (SEA-0982).

WARNING: THIS DOCUMENT CONTAINS TECHNICAL DATA WHOSE EXPORT IS RESTRICTED BY THE ARMS EXPORT CONTROL ACT (TITLE 22, U.S.C. SEC. 2751 ET. SEQ.) OR EXECUTIVE ORDER 12470. VIOLATIONS OF THESE EXPORT LAWS ARE SUBJECT TO SEVERE CRIMINAL PENALTIES.

DESTRUCTION NOTICE: DESTROY BY ANY METHOD THAT WILL PREVENT DISCLOSURE OF CONTENTS OR RECONSTRUCTION OF THE DOCUMENT.

PUBLISHED BY DIRECTION OF COMMANDER, NAVAL SEA SYSTEMS COMMAND

NOV 1988

RECORD OF CHANGES

NOTE

THIS TECHNICAL MANUAL (TM) HAS BEEN DEVELOPED FROM AN INTELLIGENT ELECTRONIC SOURCE KNOWN AS STANDARD GENERALIZED MARKUP LANGUAGE (SGML). THERE IS NO LOEP. ALL CHANGES, IF APPLICABLE, ARE INCLUDED. THE PAGINATION IN THIS TM WILL NOT MATCH THE PAGINATION OF THE ORIGINAL PAPER TM; HOWEVER, THE CONTENT IS EXACTLY THE SAME. ANY CHANGES RECEIVED AFTER RECEIPT OF THIS TM WILL ONLY FIT IN THIS PAGINATED VERSION.

TABLE OF CONTENTS

TABLE OF CONTENTS - Continued

LIST OF TABLES

LIST OF ILLUSTRATIONS

LIST OF ILLUSTRATIONS - Continued

LIST OF ILLUSTRATIONS - Continued

SAFETY SUMMARY

The following are general safety precautions that are not related to any specific procedures and therefore do not appear elsewhere in this publication. These are recommended precautions that personnel must understand and apply during many phases of operation and maintenance.

KEEP AWAY FROM LIVE CIRCUITS Operating personnel must at all times observe all safety regulations. Do not replace components or make adjustments inside the equipment with the high voltage supply turned on. Under certain conditions, dangerous potentials may exist when the power control is in the off position, due to charges retained by capacitors. To avoid casualties, always remove power and discharge and ground a circuit before touching it.

DO NOT SERVICE OR ADJUST ALONE Under no circumstances should any person reach into or enter the enclosure for the purpose of servicing or adjusting the equipment except in the presence of someone who is capable of rendering aid.

RESUSCITATION Personnel working with or near high voltages should be familiar with modern methods of resuscitation. Such information may be obtained from the Bureau of Medicine and Surgery.

The following warning appears in the text in this volume, and is repeated here for emphasis.

WARNING

If this is a shipboard installation, refer to Section 8, Model 550GT for installation instructions. (Page 1-4)

CAUTION

If connections leak, close shutoff valve and repair leaks before continuing installation. Use proper thread sealing material when making connections. (Page 1-5)

SECTION

RUSSET FRIES MACHINE

THIS MANUAL COVERS RUSSET FRIES
SOLID STATE CONTROL MODELS
550A AND 550GT

FRISPO-MATIC, RUSSET FRIES, AND FRISPO System are Trademarks of Basic American Foods

American Potato Division
Blackfoot, Idaho 83221
(800) 826-3529

SECTION

RUSSET FRIES DISPENSERS
LIMITED WARRANTY AND DISCLAIMER

The American Potato Division of Basic American Foods (BASIC) warrants only to a purchaser buying from it and to a lesee leasing from it (collectively referred to as ″Purchaser″) that each new RUSSET FRIES dispenser is free under normal use and service from defects in workmanship and materials, provided the RUSSET FRIES dispenser has received regular maintenance and cleaning pursuant to a schedule provided by BASIC, and further provided that any defective component or part has not already been repaired by anyone other than BASIC or an authorized BASIC distributor, or altered, misused, neglected, or damaged through causes unconnected with its manufacture (included but not limited to, exposure to heat in excess of 130°F [55°C]). Excluded from this warranty are light bulbs, cutter wires, cylinders, pistons and diaphragms which are components of such RUSSET FRIES dispenser and with respect to which no warranty, is given. BASIC's liability, whether under this warranty, contractual, for negligence or otherwise, is limited to the correction at its factory or replacement and the return-shipment, lowest cost transportation prepaid by BASIC, to any point in the continental United States, Alaska or Hawaii of such defective RUSSET FRIES dispenser, components or parts covered by the above express warranty as are received by BASIC at its factory transportation prepaid by Purchaser, before the expiration of the applicable time period as follows:

(i) with respect to main drive components of such machine (i.e., the motor, the gear box and the Geneva drive mechanism), with five (5) years from the date of original shipment, or prior to the completion of one hundred thousand (100,000) operational cycles as determined by the counting device installed on such machine, whichever period first ends; and

(ii) with respect to any part or component covered by the above express warranty other than said main drive components, within one (1) year from the date such machine was first installed for use, or within eighteen (18) months from the date of original shipment, whichever period first ends:

provided in all cases that the warranty registration card has been properly completed and mailed to BASIC within ten (10) days after such machine was first installed for use. Unless Purchaser instructs in advance to the contrary, BASIC will apply regular maintenance and parts charges, and will return-ship c.o.d. (including transportation at lowest cost) all defective RUSSET FRIES dispensers, components or parts received at its factory, transportation prepaid by Purchaser, which are not covered by the above warranty, such determination to be conclusively made by BASIC after inspection. BASIC assumes no responsibility for the cost of service calls or labor charges incidental to the removal or installation of any component, any part, or the entire RUSSET FRIES dispenser regardless of whether such removal or installation is related to a repair or replacement covered by the above warranty.

THE ABOVE WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER EXPRESS OR IMPLIED WARRANTY TO SAID PURCHASER OR OTHERS, INCLUDING ANY IMPLIED WARRANTY OR MERCHANTABILITY OR FITNESS, AND IS ALSO IN LIEU OF ALL OTHER OBLIGATIONS OR REMEDIES, WHETHER ON WARRANTY, CONTRACT, NEGLIGENCE OR OTHERWISE.

SECTION

RUSSET FRIES NEW SPARE PARTS LIMITED WARRANTY AND DISCLAIMER

The American Potato Division of Basic American Foods (BASIC) warrants only to a purchaser buying from it that each new spare part is free under normal use and service from defects in workmanship and materials, provided the RUSSET FRIES dispenser has received regular maintenance and cleaning pursuant to a schedule provided by BASIC, and further provided that any defective component or part has not already been repaired by anyone other than BASIC or an authorized BASIC distributor, or altered, misused, neglected, or damaged through causes unconnected with its manufacture (included but not limited to, exposure to heat in excess of 130°F [50°C]). Excluded from this warranty are light bulbs, cutter wires, cylinders, pistons and diaphragms which are components of such RUSSET FRIES dispenser and with respect to which no warranty, is given. BASIC's liability, whether under this warranty, contractual, for negligence or otherwise, is limited to the correction at its factory or replacement and the return-shipment, lowest cost transportation prepaid by BASIC, to any point in the continental United States, Alaska or Hawaii of such defective RUSSET FRIES dispenser, components or parts covered by the above express warranty as are received by BASIC at its factory transportation prepaid by Purchaser, before the expiration of the applicable time period as follows:

(i) with respect to replacement main drive components of such machine (i.e., the gear box and the Geneva drive mechanism), with one (1) year from the date of original shipment, or prior to the completion of ten thousand (10,000) operational cycles as determined by the counting device installed on such machine, whichever period first ends; and

(ii) with respect to any part or component covered by the above express warranty other than said main drive components, within six (6) months from the date such part was first purchased or five thousand (5,000) cycles of machine use which ever period ends first:

provided in all cases that the warranty registration card has been properly completed and mailed to BASIC within ten (10) days after such machine was first installed for use. Unless Purchaser instructs in advance to the contrary, BASIC will apply regular maintenance and parts charges, and will return-ship c.o.d. (including transportation at lowest cost) all defective RUSSET FRIES dispensers, components or parts received at its factory, transportation prepaid by Purchaser, which are not covered by the above warranty, such determination to be conclusively made by BASIC after inspection. BASIC assumes no responsibility for the cost of service calls or labor charges incidental to the removal or installation of any component, any part, or the entire RUSSET FRIES dispenser regardless of whether such removal or installation is related to a repair or replacement covered by the above warranty.

THE ABOVE WARRANTY IS EXPRESSLY IN LIEU OF ANY OTHER EXPRESS OR IMPLIED WARRANTY TO SAID PURCHASER OR OTHERS, INCLUDING ANY IMPLIED WARRANTY OR MERCHANTABILITY OR FITNESS, AND IS ALSO IN LIEU OF ALL OTHER OBLIGATIONS OR REMEDIES, WHETHER ON WARRANTY, CONTRACT, NEGLIGENCE OR OTHERWISE.

CHAPTER 1

GENERAL DESCRIPTION

The RUSSET FRIES DISPENSER is designed to produce potato pieces for deep-fat frying at a maximum rate of about 600 servings per hour (approximately 3 ounces of Russet Fries per serving). Russet Fries French Fry Potato Product Mix is a pelletized dry potato which comes packaged in 4 1/2 pound bags for handling convenience.

After following the simple charging procedure that is provided, the READY button on the front panel will illuminate, indicating that the RUSSET FRIES DISPENSER is ready for operation. Placing the Portion Control switch on the front panel to REGULAR or LARGE tells the machine to dispense all potato product, then recharge itself for the next cycle. A measured amount of Russet Fries French Fry Potato Product Mix is automatically dispensed from the hopper into the cylinder and hot water is pumped into the cylinder to reconstitute the mix. After the mix has been fully reconstituted, the READY button on the front of the machine will illuminate. Depressing the READY button starts the main drive motor which moves the piston forward in increments, pushing the reconstituted potato through a set of stationary, horizontal slicing wires. As reconstituted potato moves intermittently through the slicing wires, the nylon cutter wire, moving in synchronization with the piston, cuts the potato into french fry size pieces. The cut pieces are now ready to be placed in the deep fat fryer. A simplified drawing of the RUSSET FRIES DISPENSER system as outlined above is provided in Figure 1-1.

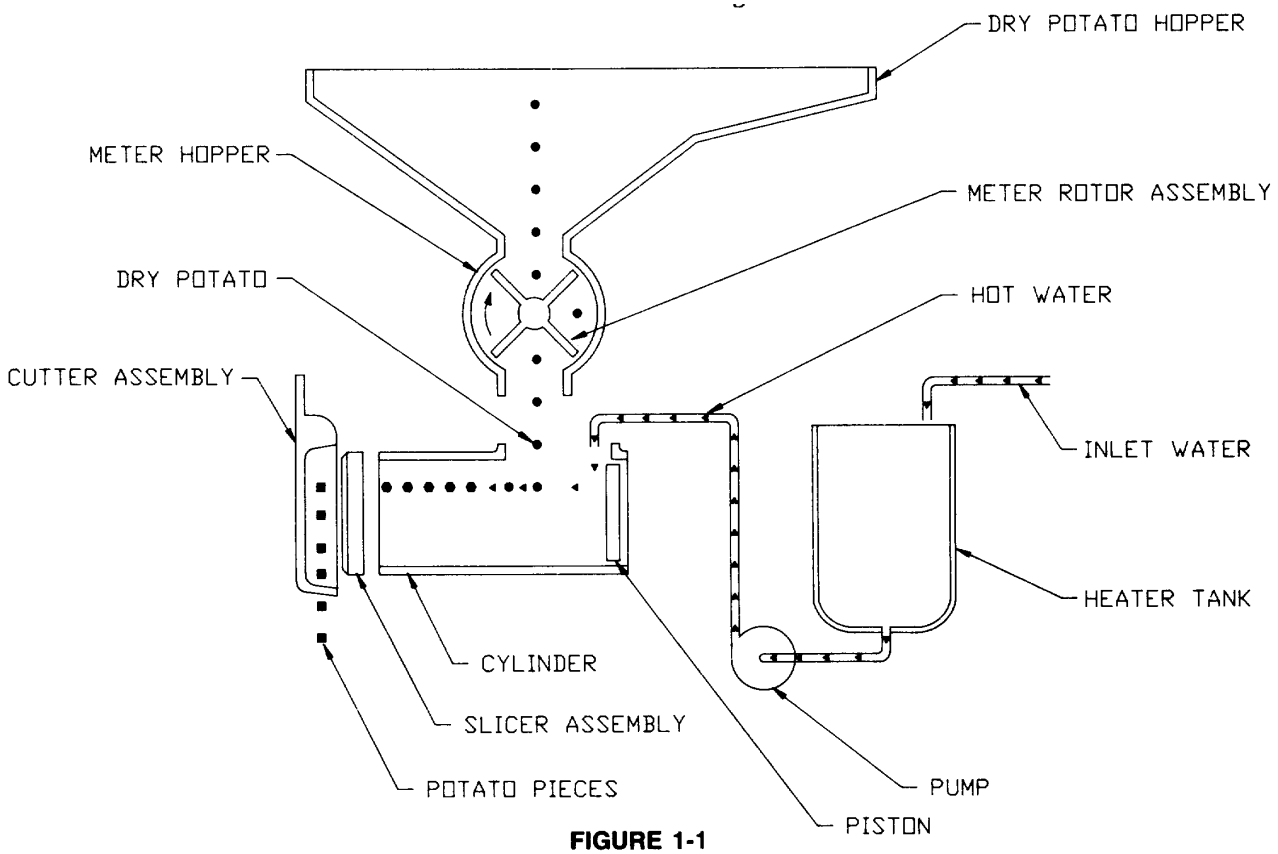


FIGURE 1-1
SIMPLIFIED DIAGRAM OF RUSSET FRIES SYSTEM

Figure 1-1 SIMPLIFIED DIAGRAM OF RUSSET FRIES SYSTEM

Potato pieces should be fried at about 350°F (177°C) for 1 1/2 minutes to produce optimum quality french fries. An optional timer is available for your convenience. This timer will provide a distinct audio buzz to indicate that fries are done and should be removed from the hot oil. This audio indicator is controlled by the Timer Adjustment Switch (SW-4) located on the printed circuit board. It allows setting the optional fry timer from 60 seconds to 130 seconds. It should be noted that variations in heating elements and temperature controls from one brand of deep-fat frying equipment to another can be expected. This capability of adjusting the timer will allow you to set the audio indicator to sound at the degree of doneness you feel best for the product at your particular installation.

If less than a full quantity of portions is desired, partial dispensing cycles may be obtained by placing the PORTION CONTROL switch on the front panel from REGULAR/LARGE to SINGLE. In this mode of operation, a single serving of potato pieces will be dispensed by the RUSSET FRIES DISPENSER each time the READY button is pushed. When all the potato pieces have been dispensed, the RUSSET FRIES DISPENSER will then recharge itself for the next cycle.

The current RUSSET FRIES DISPENSER design has evolved after many years of field testing and service and incorporates many innovations and improvements. Even though somewhat complex in its engineering, it is

sturdily constructed and will provide years of good service if properly cared for. Keeping the machine clean and in good condition at all times is extremely important, and procedures provided in this manual should be followed conscientiously as outlined.

A summary of the design improvements incorporated in the Model 550A RUSSET FRIES DISPENSER are provided in the following subparagraphs:

1. Operation and Control is accomplished with solid-state digital control printed circuit boards containing a microprocessor and solid state AC controls.
2. The water system incorporates improvements made on previous Model RUSSET FRIES DISPENSERS, plus improved placement of the high and low probes.
3. Addition of a stainless steel cutterback with a one-year supply of nylon cutter wire containing a food grade release agent for smooth cutting provides more trouble-free operation.
4. Higher volume potato output has been accomplished by enlarging the reconstituted potato system cylinder and dispensing 22 oz. every 30 seconds (when converted to hot water).
5. Addition of an optional fry timer feature provides timing for fry cooking (adjustable from 60 to 130 seconds).
6. Addition of a digital pause control adjust allows the serviceman to fine tune the advancement time of the piston from the rear position to the rehydrate position.
7. Addition of a digital volume adjust for the water tank allows for small changes of water metered into the cylinder. The fine volume adjust and fine pause adjustments both provide for optimizing the water/product mixing sequence.
8. Addition of a diagnostic display readout aids the serviceman during maintenance, troubleshooting and repair.

INSTALLATION

Installation Procedure Prior to installing the RF550A, all of the following requirements must be considered.

Do not connect water supply to the hot water line.

The RF550A must be placed on a sturdy, level surface.

Minimum counter space should be 13 inches wide, 26 inches deep, and at least 12 inches above the top of the machine.

A 115-volt AC, 15 ampere grounded power outlet should be provided within reach of the 8-foot power cord. Other equipment connected to the same branch circuit must not exceed a total load of 3 amperes (approximately 350 watts). If an extension cord is used, it must be grounded, three-wire, 14-gauge power cord. If the extension cord length exceeds 25 feet, use 12-gauge extension cord.

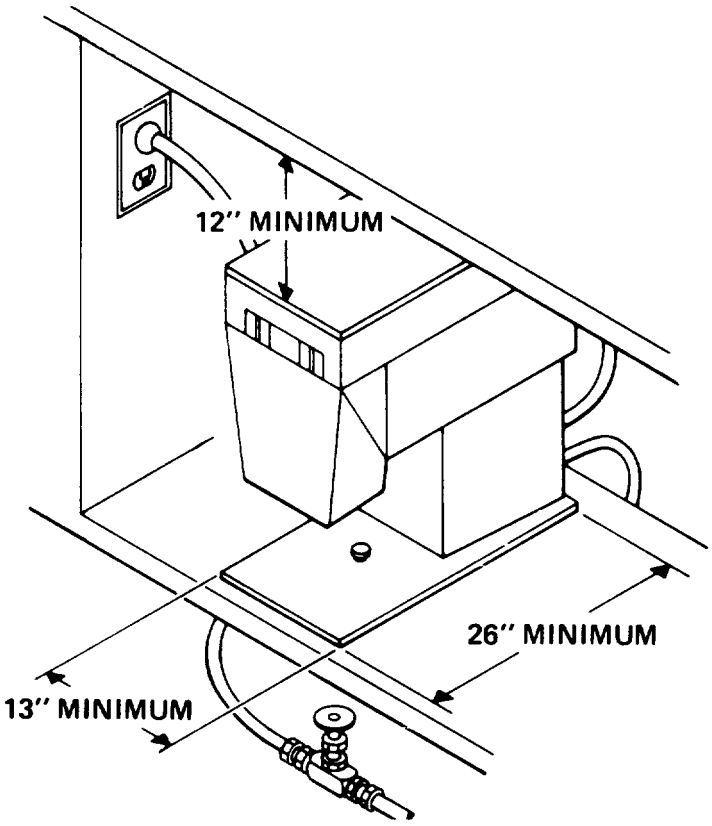
The water supply line, between the RF550A and the cold water line, must have a shutoff valve at the start of the line run. The line must not be subjected to freezing temperatures and should be routed such that if the line ruptures, water will not get into the deep fat fryer.

All plumbing and wiring must meet local codes, ordinances and regulations.

After all previous requirements have been met, perform steps outlined on the following pages.

WARNING

If this is a shipboard installation, refer to Section 8, Model 550GT for installation instructions.



The end of the supply line [2] must be within 18 inches of selected surface.

1. Install shutoff valve [1] and supply line to cold water line [4].

   One quarter-inch male fitting [3] must be provided for connection to water inlet line [7].

   The water inlet line is packaged (for shipment) under the top cover [5] of the RF550A, along with the piston, the cleaning and charging instruction sheet, the warranty card, and the transfer tray.

2. Connect male fitting to supply line.
3. Place large container under open end of fitting.
4. Open shutoff valve.
5. After approximately five gallons of water have passed through supply line, close shutoff valve.
6. Place RF550A on selected surface.

7. Remove plastic stripping plugs [8, 9 & 10] and connect water line to fittings [3 & 6].

8. Open shutoff valve and check connections for leaks.

CAUTION

If connections leak, close shutoff valve and repair leaks before continuing installation. Use proper thread sealing material when making connections.

9. Connect power cord [11].

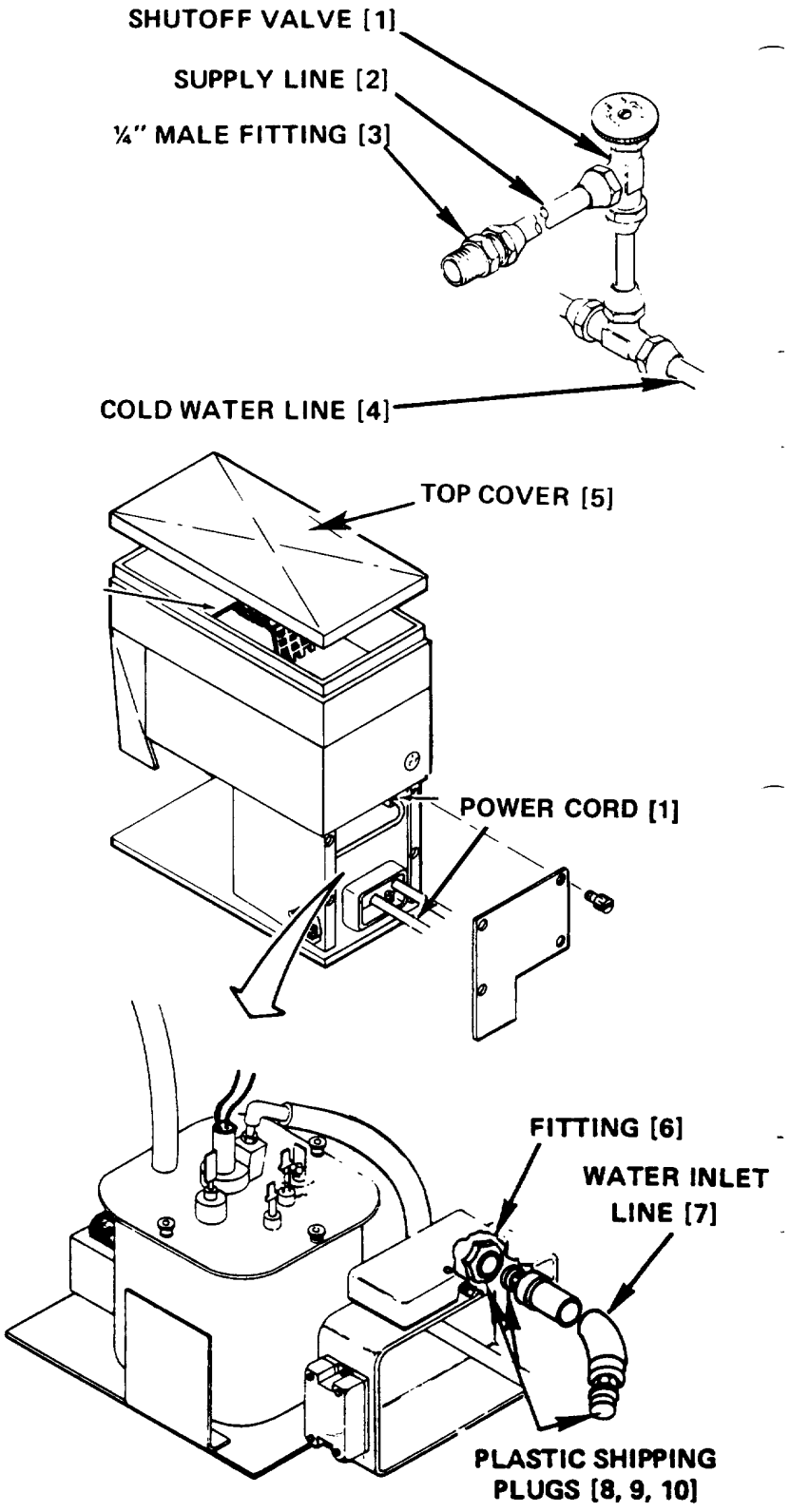
Now perform the following Installation Check:

Installation Check Tools:

1-pint container

Graduated cylinder, 500 ml

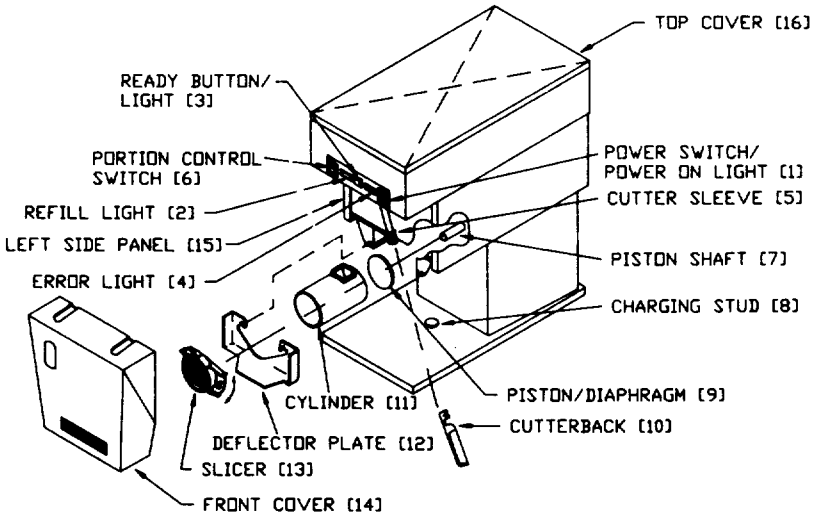
Thermometer, °F or °C.



MODEL 550A FRIER DIAGRAM

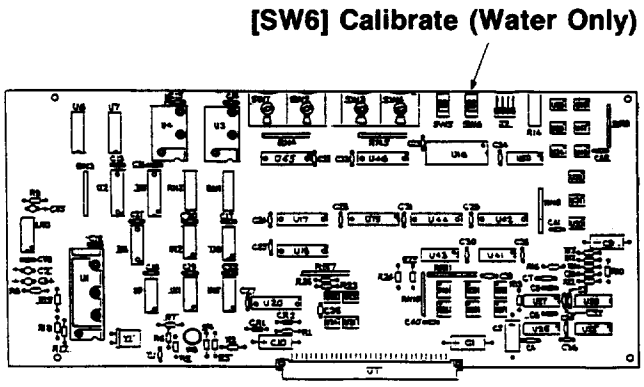
Russet Fries French Fry Mix must not be in machine when beginning the Installation Check.

1. Verify that power switch [1] is OFF.
2. Remove front cover [14].
3. Lift cutter sleeve [5] and remover cutterback [10].
4. Rotate slicer [13] counterclockwise and remove slicer.
5. Lift and remove deflector plate [12].
6. Remove cylinder [11].
7. Remove left side-panel [15] and discard antistatic shipping material protecting the main printed circuit board. Place [SW 6] in upward position. (This will allow only water to dispense and to check water volume.) Install panel and screws.
8. Replace front cover [14].
9. Place POWER switch [1] at ON.



FRIER DIAGRAM

10. Place PORTION CONTROL switch [6] at AUTO.
11. Place piston, diaphragm [9] on charging stud [8]. Place container on piston/diaphragm.
12. When READY button/light [3] illuminates, depress READY button.
13. When machine stops operating, remove the container. Do not discard the water until the container is again to be used. (This keeps the container warm.)
14. Repeat steps 10 through 13 two times.
15. Place container on piston/diaphragm.
16. Push READY button.
17. When machine stops operating, remove container.



(SW6)CALIBRATE

18. Place thermometer into water and check that temperature of water is 145° ± 2°F (62° ± 1°C).

If water temperature is below 143°F (61°C), remove screws and left side-panel. Slightly turn adjusting screw on the trim pot [R14] counterclockwise. This will adjust the water temperature higher. Install panel and screws.

If water temperature is above 147°F (63°C), slightly turn adjusting screw on the trim pot [R14] clockwise. This will adjust the water temperature lower.

19. Pour contents of container into graduated cylinder. Check that water volume in cylinder is 440 ± 3 ml.

If water volume is below 437 ml., remove screws and left side-panel. Rotate SW1 counterclockwise one number. This will raise the water volume. (Each number is equivalent to approximately 5 ml.)

If water volume is above 443 ml., remove screws and left side-panel. Rotate [SW 1] clockwise one number. This will lower the water volume. (Each number is equivalent to approximately 5 ml.) Install panel and screws.

For course water adjustment , high probe [8] may be used. (One full turn of high probe equals approximately 18 ml.)

20. Repeat step 15 through step 19 three times.

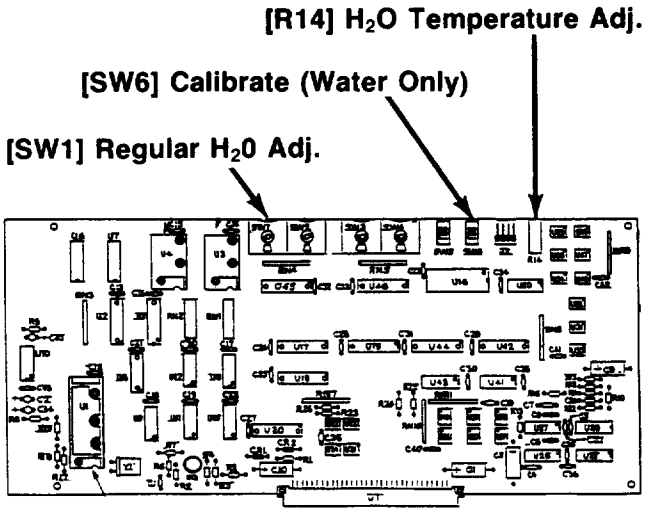
21. **Remove left side-panel, place [SW 6] in downward position. Install left side-panel and screws.**

22. Remove top cover [16] and fill hopper assembly with one bag of Russet Fries Mix.

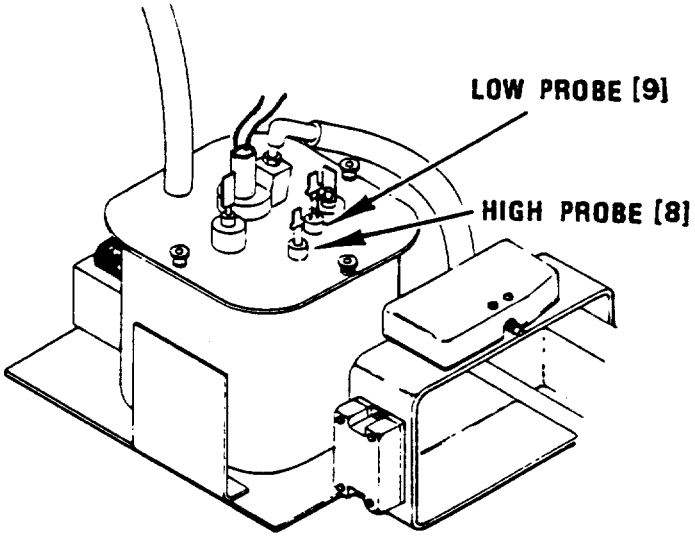
23. Perform Charging Procedure in Section 1.

24. Perform SINGLE Operation Procedure in Section 1 and dispense several portions of potato pieces.

This completes the initial Installation Check.



REGULATOR



MODEL 550 A AND 550 GT RUSSET FRIES DISPENSER CHARGING AND OPERATING INSTRUCTIONS

CLEAN DAILY

MODEL 550 A & 550 GT RUSSET FRIES DISPENSER™ CHARGING AND OPERATING INSTRUCTIONS

CLEAN DAILY

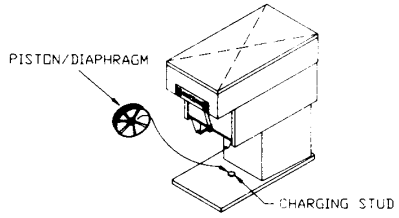
THE MODEL 550A & 550GT RUSSET FRIES DISPENSER MUST BE CLEANED AFTER EACH OPERATIONAL DAY

WARNING

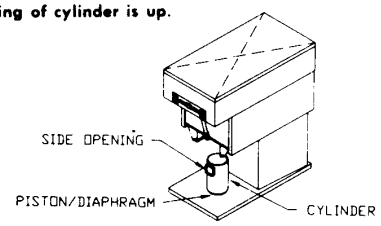
FAILURE TO CLEAN COULD CAUSE FOOD POISONING OR MACHINE DAMAGE

CHARGING INSTRUCTIONS

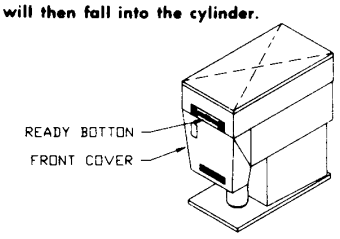
1. Turn power on. When red light in power switch illuminates, insert piston/diaphragm on charging stud at base of machine. (Make sure diaphragm is firmly in place on piston.)



2. Place cylinder over piston/diaphragm and and press down firmly. Make sure side opening of cylinder is up.

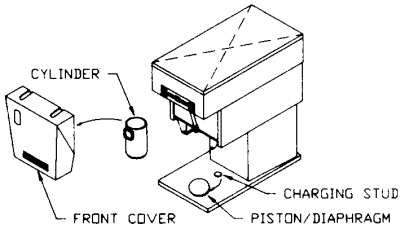


3. Place front cover on machine. Wait for READY button to illuminate. When light appears, depress READY button. Product and water will then fall into the cylinder.

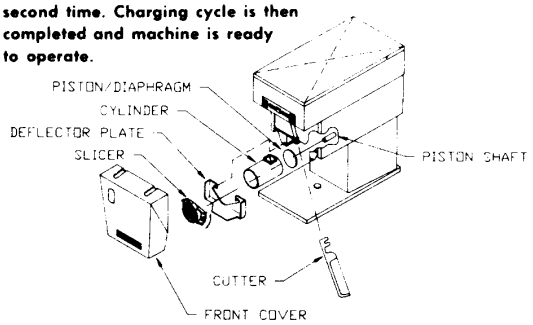


4. Wait one minute.

5. Remove front cover, lift cylinder upwards, remove piston/diaphragm from charging stud.

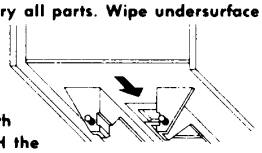


6. Place piston/diaphragm on piston shaft. Place charged cylinder over piston/diaphragm in guide slots of machine. Put deflector plate, slicer and cutter on machine. Replace front cover. When READY button illuminates, depress second time. Charging cycle is then completed and machine is ready to operate.



CLEANING INSTRUCTIONS

At end of working day, remove all parts and wash in warm soapy water. Rinse in sterilizing solution, and dry all parts. Wipe undersurface of machine.



Wipe clean with a DAMP CLOTH the area around the nozzle and RUSSET FRIES mix opening, removing all splash and splatter. Wipe dry. Keep fingers out of all internal parts.

CAUTION

Do not use abrasives on rubber, plastic or decorative stainless steel parts. Do not put parts in automatic dishwashers. Hard to remove, dried potato may be softened by soaking for a short time in warm water.

NOTE

With the PORTION CONTROL switch in "REGULAR", depressing the READY button dispenses all of the available potato from the machine. The machine will immediately mix another quantity of potato. With the PORTION CONTROL switch in "SINGLE", potato pieces will be dispensed each time the READY button is depressed. One portion of fries will be dispensed when the READY button is depressed and quickly released.

CHAPTER 2

POTATO PRODUCT HANDLING

This section describes proper handling procedures for the dry potato Russet Fries French Fry Potato Product Mix, rehydration of the dry potato in the RUSSET FRIES DISPENSER, handling and frying of the potato pieces to make the final fried product, and deep-fat fryer operating guidelines.

Russet Fries French Fry Potato Product Mix

Improper handling or storage of Russet Fries Mix can cause dry pocketing in the rehydrated potato and/or excessive sticking during frying. Dry pocketing can occur from excessive fine potato mix (fines) within the package, and from high temperature potato mix. Sticking can occur from low temperature potato mix.

1. Effect of Fines The french fry mix is designed to resist breakdown during normal shipping and handling. However, if poor shipping and handling have caused excessive fines within the package, pockets of unrehydrated mix may occur when rehydrating the mix in the cylinder of the RUSSET FRIES DISPENSER. Dry pockets from fines usually occur in the lower half of the cylinder and in the section of the cylinder immediately under the metering vane. If the dry pocket is large enough, it can bridge over the slicer wires and cause short and irregularly shaped french fries to be formed around the dry spot. Figure 2-1 illustrates the effect caused by a large dry pocket of fines.

Large dry pocketing also can cause the remainder of the rehydrated potato to be wet, which can cause excessive sticking. Figure 2-2 illustrates wet product with a large dry pocket. If the product is to wet around the dry pocket of fines, the wet potato can squirt over the piston as it advances and may partially plug the water nozzle. A partially plugged water nozzle will route water away from an area of the pile of pellets in the cylinder, causing additional dry pocketing.

To assist in avoiding the problems that can arise from fines, the distributor should:

a. Avoid dropping or throwing individual containers of product. Even though there is no visible damage to the outside of the containers, rough handling will cause a breakdown of the dry product inside the container.

b. Instruct customers and operators how to handle the dry product and advise them of problems that may occur from improper handling. The following are some guidelines:
   1) Never handle the cases or bags of french fry mix in a rough manner.
   2) Fill the RUSSET FRIES DISPENSER dry product hopper only when the REFILL light comes on. If the hopper is not allowed to drain each time, fines may accumulate on the surfaces of the hopper and later discharge en masse into the cylinder causing dry pockets.

2. Effect of Temperature Storage temperature of the Russet Fries Mix can have an effect on the quality of the french fry that is produced. High temperatures can cause dry pocketing, and prolonged storage at high temperatures can reduce the shelf life of the mix.

To assist in avoiding the problems associated with high and low French Fry Mix temperatures, the distributor should:

a. Encourage customers to store mix in an area where the temperature does not drop below 40°F (4°C) or exceed 90°F (32°C).

b. Avoid locating a RUSSET FRIES DISPENSER in an area where the ambient temperature is above 90°F (32°C).

Dry pockets may begin to show at temperatures above 90°F (32°C) and increase in severity with temperature. When the dry French Fry Mix is hot it picks up water rapidly. Dry pocketing results when the French Fry Mix picks up the water too fast in the area of direct water contact to permit the water to flow to other areas of the pile of dry French Fry Mix in the cylinder.

At French Fry Mix temperatures of 90°F (32°C) and higher, dry pockets may occur in the upper left and right hand corners of the slicer (at 10:00 and 2:00). At excessively high French Fry Mix temperatures (usually above 120°F [49°C]), dry pocketing may occur across the face of the slicers connecting the dry pocket at 10:00 with the dry pocket at 2:00. Figure 2-3 illustrates the dry pocketing that may occur at moderate high French Fry Mix temperatures, and Figure 2-4 illustrates the dry pocketing that may occur at excessively high product temperatures. Large dry pockets also indicate that other areas of the reconstituted potato are wet which can cause sticking and increased oil pickup during frying.

Sticking and oil pickup may begin to increase at temperatures below 40°F (4°C). This occurs when the dry French Fry Mix is cold because cold pellets pick up water more slowly than warm pellets. Excessive water between the pellets causes the freshly-cut french fry surfaces to be sticky and allows the frying oil to penetrate the piece more easily.

3. Additional Dry Product Care The distributor can help the customer get high quality french fries and maximum yield from the dry french fry mix in the following additional ways:

a. Encourage the customer to store the French Fry Mix in a dry area, preferably off the floor.

b. When delivering French Fry Mix, advise the customer to use the oldest product first.

c. Check the customer’s storage area for signs of contamination by rodents and vermin.

Rehydration in RUSSET FRIES DISPENSER

Observation of the rehydrated potato in the cylinder provides the best indication as to whether the RUSSET FRIES DISPENSER and the Russet Fries French Fry Potato Product Mix are performing properly. A properly rehydrated potato will look smooth and natural as it is cut.

Machine calibration problems can cause rehydrated potato irregularities as follows:

1. Too much water and/or low water temperatures can cause a wet rehydrated potato that will stick as it is cut and fried.

2. Too little water and/or high water temperatures can cause dry pocketing similar to those caused by dry product temperatures (see Figure 2-3 and Figure 2-4).

The distributor should insure that each machine is properly calibrated when it is installed, and should check and correct any drift from the specified calibration. The 550A RUSSET FRIES DISPENSER should be calibrated to deliver 440 ± 3 ml of water at a temperature of 145 °F (63° ±C) ± 2° F.

Rehydrated Potato Piece Handling

Proper handling of the rehydrated potato piece aids in maintaining a high yielding and high quality french fry with a uniform golden brown color.

The distributor should be prepared to demonstrate proper handling of the rehydrated potato piece. The following guidelines are given:

1. The best quality french fry with minimum sticking and breakage can be obtained with a conveyor.

2. When a conveyor is not used, dispense rehydrated potato pieces evenly onto a transfer tray.

3. Slide the pieces from the tray into a fry basket which is submerged in the frying oil (do not place a complete cylinder of product in baskets which are narrower than 5 inches). EXAMPLES OF UNEVEN WATER DISTRIBUTION IN REHYDRATED POTATO CAUSED BY FINES AND MACHINE CALIBRATION PROBLEMS.

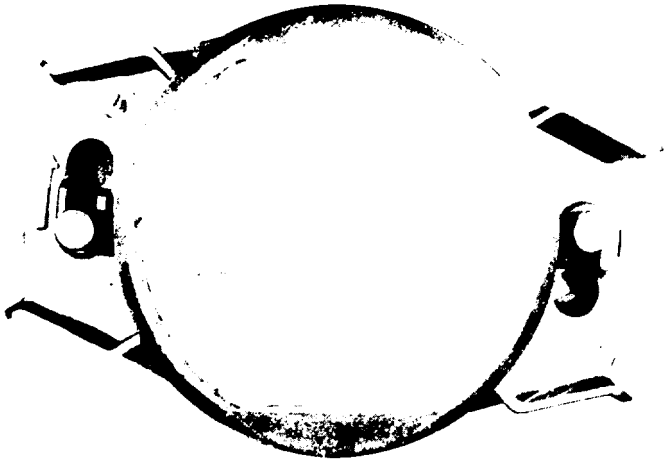


Figure 2-1
Dry pocket of fines.

Figure 2-1 Dry pocket of fines.

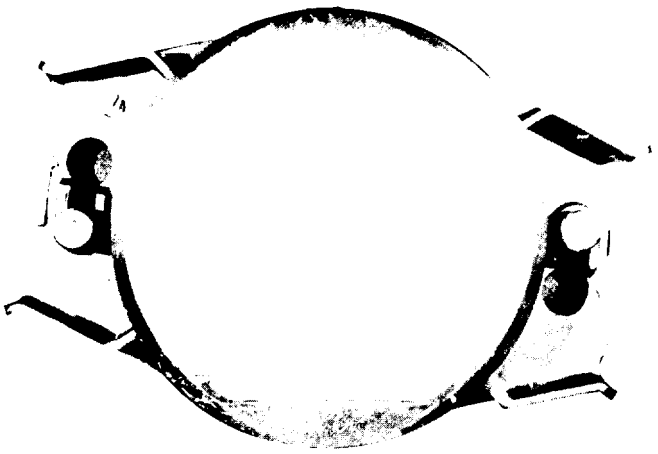


Figure 2-2
Too much water causing wet product.

Figure 2-2 Too much water causing wet product.

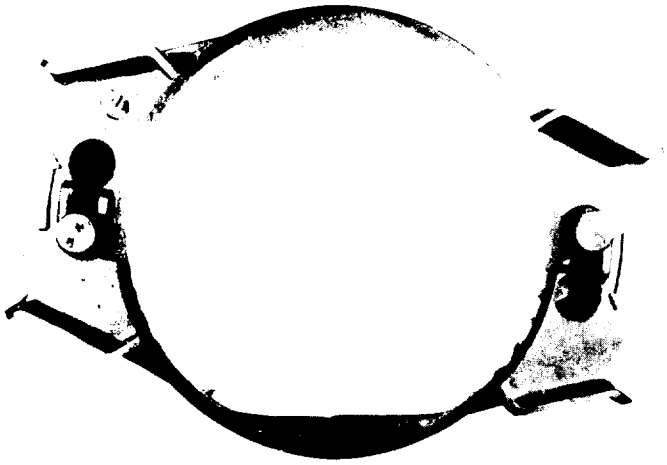


Figure 2-3
Dry corners caused by high dry product temperature, too little water, and/or high water temperature.

Figure 2-3 Dry corners caused by high dry product temperature, too little water, and/or high water temperature.

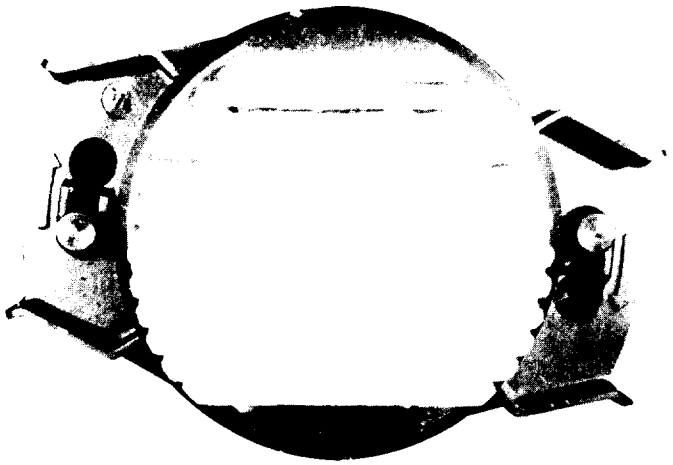


Figure 2-4
Dry area caused by excessively high product temperature, too little water, and/or high water temperatures.

Figure 2-4 Dry area caused by excessively high product temperature, too little water, and/or high water temperatures.

4. About 5 seconds after the potato pieces have been placed in the fryer, shake the basket up and down to spread the pieces evenly. Rough or excessive shaking increases breakage. Moderate up and down shaking that allows the potato pieces to float in the frying oil is usually all that is required to separate the pieces.
5. Fry Russet Fries to desired color (1 to 2 on USDA chart). This should take about 1 1/2 minutes at about 350°F (177°C) oil idle temperatures.
6. Remove the basket from the frying oil and shake lightly with a back and forth motion. The basket should remain over the frying kettle to allow excess oil to drain back into the frying kettle.
7. If Russet Fries cannot be served ″to order″ immediately place them in a suitable holding area.

Fried Product Holding

The following guidelines are given for holding Russet Fries to maintain highest eating quality:

1. Hold fries in an area where the temperature is uniformly 120-140°F (49-60°C). Higher temperatures cause fries to dry out and become tough.
2. Red infrared bulbs or quartz infrared tubes are the most suitable heat sources for holding Russet Fries. White infrared bulbs accelerate off-flavor developments.
3. Hold the fries so they are not steamed. Holding in a shallow layer (1″ deep or less) on an open tray is best. Stacking deeper or holding in bags tends to steam fries and they lose crispness faster.
4. Do not hold Russet Fries in excess of 20 minutes. If oil quality is poor and/or fryer heat capacity is minimal, the holding time should be less than 10 minutes. Off flavors from poor quality oil develop rapidly while holding, especially under a white infrared bulb.

Fryer Operation

Because all of the oil in the final Russet Fries product is absorbed from the food service location's fryer, it is important to start with and maintain good oil quality. The operator of a location where a RUSSET FRIES DISPENSER is installed should be informed of the following guidelines so that the product and oil quality will be optimum:

1. Check the fryer thermostat frequently with a thermometer to make sure that it is accurate.

2. For high capacity and fast recovery fryers (greater than 18 kw or 130,000 Btu/hr input) set idle temperature for frying Russet Fries at 345-350°F (174-177°C). If fryer size is smaller or slower in recovery set temperature higher. Set 6 kw and 30,000-50,000 Btu/hr fryers at 370-375°F (188-191°C). Set 12 kw and 80,000-110,000 Btu/hr fryers at 355-360°F (179-182°C). If frying in less than full batches, idle temperatures should be reduced. Basically, it is desirable to fry Russet Fries in an average shortening temperature of 330-340°F (166-171°C) with a maximum idle temperature of 375°F (191°C) and a minimum temperature of 320°F (160°C) during frying.

3. Maintain proper oil level in fryer. It is desirable to keep the oil level as high as the manufacturer's instructions will allow.

4. Fry only one batch of Russet Fries at a time. The fry basket should never be filled over half full.

5. Do not season foods over the fry kettle as some of these seasonings might contain traces of metals which have a detrimental effect on oil quality.

6. Turn fryer to an idle temperature of 200°F (93°C) or less during slow periods of the day.

7. Shut off thermostat completely during the off hours for those locations not staying open 24 hours.

8. Filter or strain the frying oil as needed to remove food particles and crumbs. As a rough guideline, filter the oil once for every two cases of Russet Fries French Fry Potato Product Mix used, not to exceed once per day and not less than twice per week.

9. Wipe kettle clean after removing the oil for filtering.

10. Thoroughly clean the fryer and heating coils once a week to remove all varnish and gum deposits. Be sure to rinse thoroughly so that no detergents are left. If caustic cleaners are used, follow with a vinegar rinse, and finally a hot water rinse. For electric kettles where manufacturer's instructions allow, raise the heating elements and turn on ″full heat″ to burn off excess deposits on the element surfaces. This procedure also tells you if the ″fireguard″ is operating properly.

11. Avoid contamination of the frying oil with copper or brass and prevent drippage of moisture from hoods back into fryer kettle. Copper or copper-containing alloys act as catalysts in the oxidation of the oil. Oxidation of oil results in degradation of the flavor and color quality.

TROUBLESHOOTING GUIDE PRODUCT

Product Troubleshooting Guide

SYMPTOMS	PROBABLE CAUSES
1. Dry pebbling	a. Water volume too low. b. Water temperature too high. c. Dry product ambient too high (+95°F [+35°C]). d. Poor water distribution from nozzle. e. Product hopper running too slow. f. Excessive fines in dry product.
2. Product too wet (sticking)	a. Water volume too high. b. Water temperature too low. c. Dry product ambient too low. d. Water temperature too high-(this will cause very uneven distribution of water in the product causing very wet and very dry areas).
3. Sticking	a. All of above. b. Too small fry baskets. c. Improper or no shaking of fries. d. Improper oil temperature. e. Improper handling of product from the machine to the fryer.
4. Excessive breakage	a. Small fry baskets. b. Excessive shaking. c. Improper handling of fries from the machine to the fryer. d. Water volume too low. e. Water temperature too high. f. Excessive fines in dry product.
5. High oil absorption	a. Fries too wet or dry out of machine. b. Frying temperature too high or too low. c. Fryer too small. d. Poor oil quality.
6. Fries not holding very long after frying.	a. Frying temperature too high. b. Holding temperature too high. c. Stacking fries too deep in holding area. d. Inadequate ventilation of fries (closed containers, steam tables. etc.).
7. Irregular shaped fries	a. Water temperature too high. b. Excessive fines in product. c. Part of slicer wires blocked off. d. Slicer wires broken. e. Water volume too low.
8. Rough fry texture	a. Water temperature too high. b. Dirty cutter wire. c. Dirty slicer wires. d. Water volume too low.
9. Fries falling apart in fryer.	a. Product too wet.. b. Product out of specification

Product Troubleshooting Guide - Continued

SYMPTOMS	PROBABLE CAUSES
10. Dry pockets.	Adjustment of the pause during the rehydration cycle is controlled by rotary switch SW-2. It normally is set at the factory at position 4, which equals 3 seconds. The pause adjustment is primarily used to eliminate dry pockets in the rehydrated product due to the effect of high storage temperatures on the French Fry mix. Dry pockets may begin to show at temperatures above 90°F (32°C) and increase in severity with temperature. When the dry French Fry mix is hot, it picks up water rapidly. Dry pocketing results when the French Fry mix pickes up the water to fast in the area of direct water contact to permit the water to flow to other areas of the pile of dry French Fry mix in the cylinder. If dry pockets do occur because of high product temperatures, refer to Section 2.2 of this manual for possible solutions.

CHAPTER 3

RECEIVING AND SHIPPING INSTRUCTIONS

RECEIVING

Upon receipt of the RUSSET FRIES DISPENSER, perform the following inspection:

1. Check shipping container for evidence of having been dropped, punctured, etc. Inspect the RUSSET FRIES DISPENSER for damage and loose parts. Dispenser Manufacturing is not responsible for damage received after consignment to a common carrier. Damage to the shipping container or the RUSSET FRIES DISPENSER should be reported to the carrier as soon as possible.

Do not return a damaged unit to the factory prior to obtaining a Return Authorization from Dispenser Manufacturing Division.

2. Check the invoice to ensure that all parts ordered have been received.

3. The serial number of the RUSSET FRIES DISPENSER should be checked against that listed on the invoice. The serial number appears on the nameplate behind the front cover assembly (door) of the machine.

SHIPPING

Should it become necessary to return a complete unit to the factory, the unit must first be drained* and shipped in the container designed for it. The distributor should maintain one or two complete shipping containers for this purpose. Figure 3-1 illustrates the proper packing procedure for a complete unit. A damanged or defective part, or the complete unit should be returned to the factory as follows:

1. Parts Defective Within Warranty
   a. All defective parts covered by the warranty will be replaced without charge upon receipt of the defective part(s).
   b. Send the defective unit with the Return Authorization and all defective parts, freight prepaid to:

Dispenser Manufacturing Division
273 West Pacific Street
Blackfoot, Idaho 83221

2. Replacement Parts Replacement parts are available. Telephone or wire National Service Manager at Dispenser Manufacturing Division. Commercial number: (208) 785-3200; Fax: 785-3200, ext. 392; toll-free: (800) 826-3529.

3. Parts Defective Out of Warranty Replacement parts not covered by the warranty will be supplied at the current part price at the time of shipment. Shipment will be made collect, unless otherwise specified. All replacement parts will carry the standard warranty. Submit all orders for replacement parts to the same address shown in Paragraph 1.b.

*NOTE: A complete RUSSET FRIES DISPENSER or Water System unit must be drained of all water prior to packaging. Failure to do so may result in freezing and breakage in adverse weather, or allow water to spill onto electrical components and cause failures. All Russet Fries French Fry Potato Product Mix must be removed from the storage hopper prior to packaging and shipping. Also, (if applicable) the gearbox vent must be replaced with the gearbox plug prior to shipment.

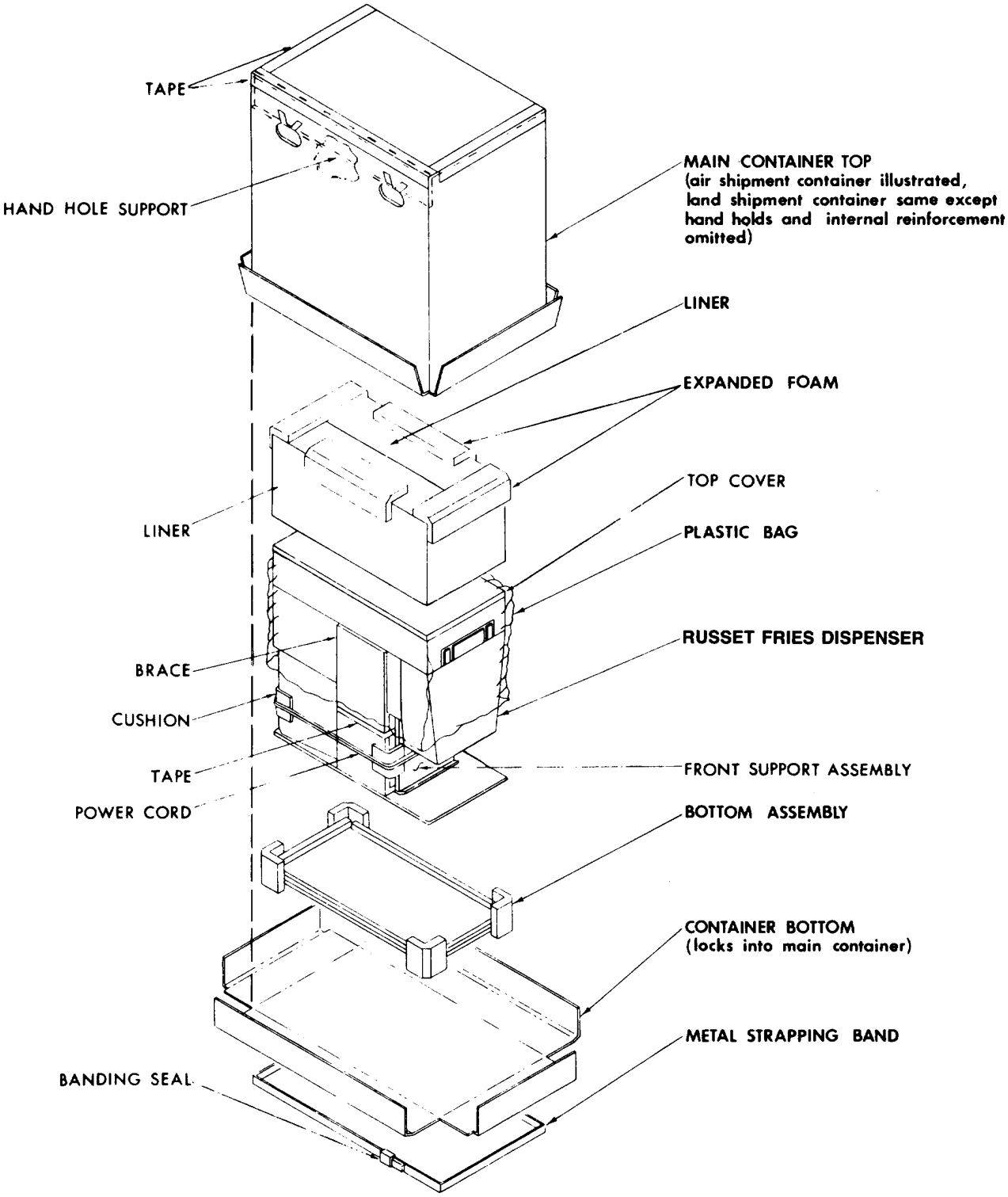


FIGURE 3-1
PACKAGING INSTRUCTIONS

Figure 3-1 PACKAGING INSTRUCTIONS

CHAPTER 4

MODEL 550A

The Model 550A performs basically the same as the Model 550. However, some rather significant improvements have been made to certain subsystems. These improvements have caused changes in both the hardware and the software of the new machine. This chapter outlines the scope of these changes in the Model 550A. In all other respects, this manual applies to the Model 550A and can be used for operation and maintenance purposes.

The Model 550A provides an improved control system which allows dialable cut for fry sizes; dialable portion control for portion sizes; and a choice of 22 ounce or 33 ounce dispense. In the water system the mechanical thermostat has been replaced by a solid state thermistor, providing many more hours of trouble-free operation.

The front panel displays have been revised to provide easily understandable front panel instructions. The two digit Diagnostic Display is now located in the lower left hand corner of the front piece. The Diagnostic Display legend is provided in Figure 5-1. The timer-buzzer has been removed from the internal cabinetry. It can now be ordered as an optional accessory and be installed in any convenient external location.

Changes have been made to the main microprossor board. These revisions are explained in detail in this section of the manual. Illustrated parts lists are provided to indicate current hardware configurations. A revised troubleshooting guide reflects all current changes in both hardware and software.

In RF550A machines, serial #8000 and above, additional improvements have been made. See figures below for details.

ADDITIONAL IMPROVEMENTS

RF550A Overall Connection Diagram (Supersedes figure 7-1)	Figure 7-2	Page 7-13
RF550A Assembly Drawings (Supersedes figure 6-1A to Figure 6-1F)	Figure 6-2A to Figure 6-2F	Page 6-13 to 6-23

SPECIFICATIONS

MODEL 550A AVAILABILITY	Production of the Model 550A RUSSET FRIES DISPENSER started with serial number 7000.
STANDARD ACCESSORIES	A transfer tray and a 1/4″ straight cut slicer are included with each machine.
OPTIONAL ACCESSORIES	See Section 12 for a list of optional accessories available for order.
STANDARD MACHINE CALIBRATIONS (per cycle)	Water Volume: Regular Mode 440 ml. Large Mode 660 ml. Water Temperature: 145°F (63°C) nominal
RUSSET FRIES FRENCH FRY POTATO PRODUCT MIX STORAGE CAPACITY	13.5 lbs. of mix (enough for approximately 33 machine cycles) or 27 lbs. of mix (enough for approximately 66 machine cycles) with hopper extension.

SPECIFICATIONS - Continued

CYCLE TIME (at 115 Volts)

Regular Mode:
90 seconds with 55°F (13°C) inlet water
30 seconds with 135°F (57°C) inlet water
Large Mode:
120 seconds with 55°F (13°C) inlet water
60 seconds with 135°F (57°C) inlet water

BATCH SIZE

Regular:
22 oz. uncooked
15.2 oz. fried
Large:
33 oz. uncooked
22.5 oz. fried

FRY SIZES:

Fry Size Switch Setting	Fry Size (inches)
0	Keyed Slicer (Default 1/4)
1	3/22
2	1/8 (2/16)
3	3/16
4	1/4 (4/16)
5	5/16
6	1/4
7	1/4

PORTION SIZES:

Fry Size Switch Setting	Portion Size Switch Setting	Fried Weight (oz.)
2	0,1	0.8
	2	1.6
	3	2.4
	4	4.0
	5	5.5
	6	7.1
	7	8.7
3	0,1	1.3
	2	2.5
	3	3.8
	4	5.0
	5	6.3
	6	7.5
	7	8.8
4	0,1	1.5
	2	3.0
	3	4.5
	4	6.0
	5	7.5
	6	9.0
	7	10.5
5	0,1	1.9
	2	3.8
	3	5.6
	4	7.5
	5	9.4
	6	11.3

SPECIFICATIONS - Continued

		7	13.1
MAXIMUM PORTIONS PER BATCH (Number of cuts per batch)		Number of cuts/batch Mode	
	Fry Size	Regular	Large
	3/32	24	36
	1/8	20	30
	3/16	12	18
	1/4	10	15
	5/16	8	12
ENVIRONMENTAL TEMPERATURE	Will operate in temperatures above 32°F (0°C) and below 130°F (55°C) and in 99%+ relative humidity (designed specifically for use in institutional kitchens).		
INLET WATER PRESSURE	5 psi to 100 psi		
POWER REQUIRED	115 VAC, 60 Hz, 15 Amps maximum (will operate on 105 to 130 VAC)-240 VAC, 50 Hz and 208 VAC, 30, 60 Hz available as an option.		
VIBRATION	Will tolerate reasonable vibrations (0.05 g. max.)		
TILT ANGLE	Will operate while tilted as much as 3 degrees in any direction.		
PERMISSABLE MACHINE STORAGE	-30°F (-34°C) to +150°F (66°C)-Water system must be drained.		
DIMENSIONS	27 7/16″ high (32″ high when optional hopper extension is added) x 12 3/4″ wide x 25 3/8″ deep.		
WEIGHT	119 pounds (54.0 Kg) net 139 pounds (63.1 Kg) shipping weight		
UTILITY CONNECTIONS	One 8-foot power cord with 3-prong plug. One 2-foot flexible inlet water line with 1/4-18 NPT female fitting.		
APPROVALS	NATIONWIDE Underwriters' Laboratories, Inc. National Sanitation Foundation LOS ANGELES Mechanical Testing Laboratory Electrical Testing Laboratory (by virtue of U.L. Approval) County Board of Health (by virtue of NSF Approval)		

The serial number of each unit is located on the nameplate mounted behind the front cover assembly (door).

SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE

CHAPTER 5

MODEL 550A THEORY OF OPERATION

As previously noted, some major improvements have been made in both the hardware and software in the Model 550A. A detailed description of these changes is provided herein. Section 7 also provides a new trouble-shooting guide to the machine with revisions outlined herein.

1. Hardware Description.

a. Gear Box The gear box has an adjustable extrude length. The length is measured and controlled by counting the number of motor revolutions with the encoder on the rear of the drive motor. This encoder has a resolution of 1/8 of a motor turn which is equivalent to 0.01 inch of extrude length. The extrude length controls the fry size (i.e., 3/32, 1/8, 3/16, 1/4, 5/16). The home position of the gear box is the zero position (piston to the rear). The zero position is sensed with the zero sensor. There is a magnet implanted in the plunger shaft. When the magnet moves under the zero sensor, zero has been reached.

b. Cutter The cutter is driven by a gear motor. The cutter position is sensed by the cutter activated switch (CAS). After the piston has advanced to the desired extrude length, the cutter cuts the fry.

c. Control Circuitry The control circuitry consists of three printed circuit board assemblies.

1) The main microprocessor performs the main control function. It monitors the following inputs.

a) Water temperature
b) Low probe
c) High probe
d) Cutter activated switch
e) Product activated switch
f) Low product sensor
g) Front interlock
h) Zero sensor
i) Main drive motor activated switch
j) Serial output from display board
k) Slicer activated switch

It generates the following outputs:

a) Pump solid state relay control
b) Product solid state relay control
c) Fill solenoid solid state relay control
d) Cutter motor solid state relay control

e) Conveyor motor solid state relay control

f) Main drive motor forward solid state relay control

g) Main drive motor reverse solid state relay control

h) Water heater solid state relay control

i) Buzzer control, D.C. output

j) Serial output to display board.

2) The mother board provides the main interconnect between the wiring harness and the main printed circuit board. Terminal block 1 interfaces to the A.C. wiring harness. Terminal block 2 interfaces to the D.C. wiring harness. P1 interfaces to the main printed circuit board. J3 connects to the product hopper connector. The mounting position for the solid state relays is also the mother board. These relays are plugged in and out of the mother board. Also contained on the mother board is a 2000MF capacitor. This capacitor provides power recovery during a mix cycle for power outages under one minute.

3) The display printed circuit board receives serial information from the main circuit board. This information is displayed on the numeric display and on the front panel lights. The display printed circuit board transmits serial information to the main printed circuit board. This information consists of fry size, serving size, portion control and dispense.

d. Front Panel Lights

1) Refill light performs the same function as on the other 550 models. Refill product hopper only when refill light is lit.

2) Error Light. This light indicates that the machine is no longer functioning. The microprocessor has detected an error condition and shut the machine down. To determine the error condition, observe the error code number on the numeric display. To restart the model 550A, turn the main power switch off, then back on.

3) Ready Light. Ready light illuminates when ready to dispense.

e. Front Panel Switches

1) The ready button dispenses product when pushed.

2) Portion control switch is a three position toggle switch.

a) Position 1 - Large dispense dispenses in auto mode thirty-three ounces of product.

b) Position 2 - Places machine in single portion dispense mode, portion size controlled by serving size selector.

c) Position 3 - Regular dispense twenty-two ounces auto dispense mode.

3) Fry Size Switch

a) The settings 4, 0, 6 & 7 select 1/4 inch fries.

b) Setting 1 - 3/32″ specialty fries and hashbrowns.

c) Setting 2 - 1/8″ french fry or hashbrowns.

d) Setting 3 - 3/16″ french fry or shoestrings.

e) Setting 5 - 5/16″ fry or steak fry.

4) Portion Size Switch In settings 0 and 1 - 1 cut per portion; Setting 2 - 2 cuts per portion; Setting 3 - 3 cuts per portion; and, Setting 4 - 4 cuts per portion.

5) Front Panel Diagnostic Display (See Figure 5-1) The diagnostic display is located on the front panel of the Model 550A in the lower left-hand corner of the machine. It is divided into left and right digits during normal operation. Each digit has its own meaning as shown following:

DIAGNOSTIC DISPLAY FOR MODEL 550A

LEFT DIGIT	**RIGHT DIGIT**
No. Meaning	No. Meaning
1 Power On	0 Ready to Mix
2 Waiting to Dispense	1 H_2 0 Filling
3 Dispensing	2 H_2 0 Heating
4 Seeking Zero	3 Refill Hopper
5 Waiting to Mix	
6 Mixing	

If an error condition is detected by the microprocessor, both digits are used to signify error codes. Error codes are shown following:

ERROR CODES FOR MODEL 550A

No.	Meaning
91	No Drive Reverse
92	No Drive Forward
93	Bad Product System
94	No Fill Water
95	No Pumping
96	No Water Heater
97	Install Front Cover
98	Not Cutting
99	Not Seeking Zero

The error codes indicate what the microprocessor considers to be wrong. As an example, Error Code 93 - Bad Product System, can either mean that the product drive motor did not run when commanded (turned on), or the product drive motor sensor did not inform the microprocessor that the drive motor was running. Each one of the error codes has the same type of two probable errors - an action did not take place or the microprocessor did not detect the action. Error Code 94 No Fill Water, is displayed if the water tank has not filled within a fixed amount of time. If this condition is displayed, check to find out if the water to the machine is disconnected or turned off.

2. Calibration.

a. Water Volume Calibration The 550A water volume is calibrated basically the same as the 550 water volume. Calibration is accomplished by timing below the low probe. This timing is set by the adjustable switch on the microprocessor board. On the Model 550A, there are two switches which control the water volume, SW1 and SW2. SW1 is used to adjust the regular dispense mode water volume. SW2 is the large dispense volume adjustment. Switch SW1 should be set on setting 8 in the shop, and the high probe adjusted for 440 mls. of water on regular dispense. Switch SW2 should then be adjusted for a large dispense volume of 660 mls. In the field, the adjustment may be made just using SW1 and SW2.

b. Pause Adjust Switch SW3 is used to adjust the distribution of the water from the top to the bottom of the dough slug, allowing for the adjustment of a wet or dry pocket out of the dough slug.

SW3 should be set at position 4.

If the dough slug has a wet (or dry) bottom (or top), adjust this setting.

The greater the SW3 setting, the longer the pause and the dryer the top of the dough slug.

c. Fry Timer Adjust Switch SW4 is the fry timer adjust. The fry timer-buzzer plugs into the socket at the rear of the machine just above the conveyor receptacle. The fry timer adjust on the printed circuit board sets the time from when the dispense button is pushed until the buzzer buzzes. This is adjustable from 60 seconds at zero setting to 130 seconds at setting 7. The buzzer is provided as an optional external accessory to the Model 550A.

d. Water Temperature Calibration Trim pot R14, mounted on the upper right-hand side of the main microprocessor board, adjusts the water temperature. Turning this trim pot counterclockwise adjusts the water temperature higher. Turning this trim pot clockwise adjusts the water temperature lower.

3. Sequence of Events

The Model 550A has six major states in its sequence of events. (See Figure 5-2)

a. State 1 - Initialization (power up) During initialization lights flash, the microprocessor seeks zero with the main gear box and parks the cutter to the right or left side. It then moves to state 2. The front cover must be installed for the microprocessor to park the cutter.

b. State 2 - Waiting to Dispense This is the time period from when the ready light illuminates until the first dispense.

During this time the front panel switches may be changed to any desired fry size, serving size, or portion. This is the only time the fry or serving size may be updated and have any effect upon the dispense. When the dispense button is pushed, the state changes to state 3.

c. State 3 - Dispensing This is the state in which the microprocessor is dispensing the product. No operator interaction is needed if in the auto mode. However, if you are in the portion mode, the microprocessor cuts one serving and then stops, waiting for the ready button to be pushed. When all the servings have been dispensed, the microprocessor moves to state 4.

d. State 4 - Seeking Zero This is the state the microprocessor is in while seeking zero. The microprocessor has the main drive motor in the reverse mode and is looking for the zero switch. When the zero switch is reached, the microprocessor is in state 5.

e. State 5 - Waiting to Mix The microprocessor is waiting on one or more of the following items before mixing: water filling; water heating; product hopper refill.

f. State 6 - Mixing The microprocessor is mixing when it is dumping product or water, or when it is waiting for the dough to set up.

DISPLAY CODES (NORMAL OPERATION)

LEFT DIGIT

NO.	MEANING
1	POWER ON
2	WAITING TO DISPENSE
3	DISPENSING
4	SEEKING ZERO
5	WAITING TO MIX
6	MIXING

RIGHT DIGIT

NO.	MEANING
0	READY TO MIX
1	H_2O FILLING
2	H_2O HEATING
3	REFILL HOPPER

ERROR CODES:

NO.	MEANING
91	NO DRIVE REVERSE
92	NO DRIVE FORWARD
93	BAD PRODUCT SYSTEM
94	NO FILL WATER
95	NOT PUMPING
96	NO WATER HEATER
97	INSTALL FRONT COVER
98	NOT CUTTING
99	NOT SEEKING ZERO

FIGURE 5-1
DISPLAY CODES (NORMAL OPERATION)

Figure 5-1 DISPLAY CODES (NORMAL OPERATION)

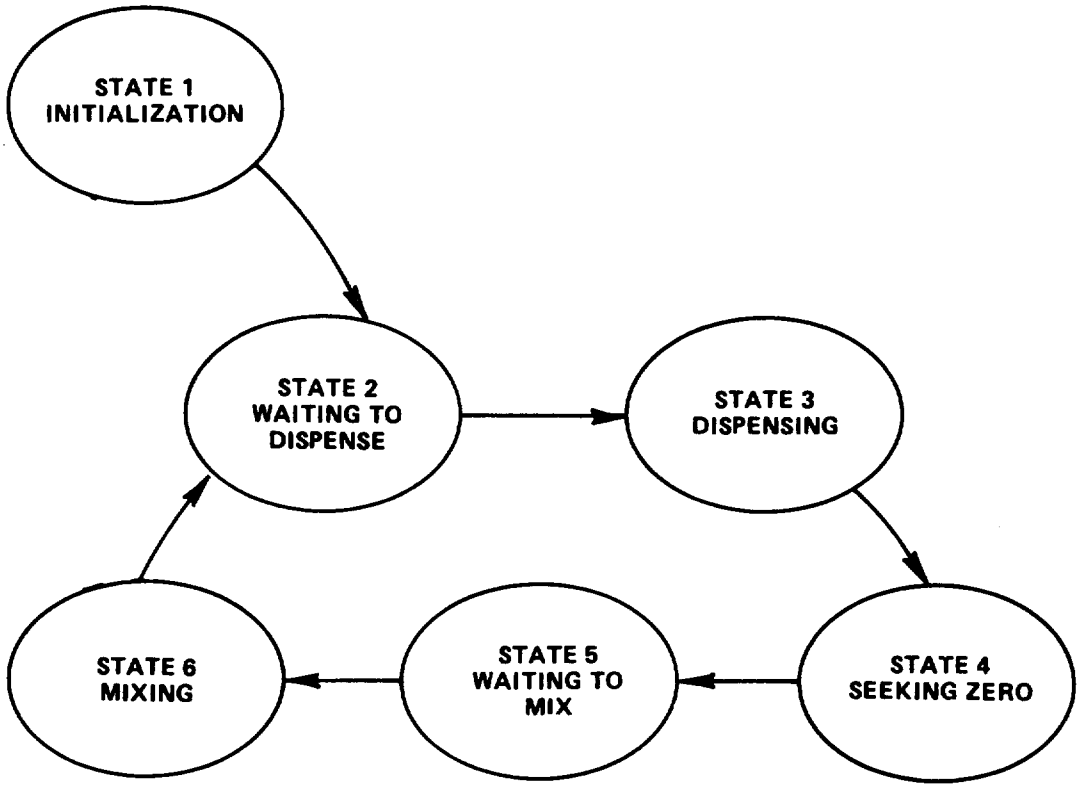


FIGURE 5-2
MAIN MICROPROCESSOR STATES

Figure 5-2 MAIN MICROPROCESSOR STATES

CHAPTER 6

MODEL 550A ILLUSTRATED PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY	SHEET
1	STD-1349	CONVEYOR RECEPTACLE	1	5
2	11112	NAMEPLATE	1	2
3	20095	FRONT COVER ASSY	1	2
4	10362	FRONT WARNING LABEL	1	2
5	STD-1249	SEALANT	AR	2,3,4
6	10976	TOP COVER	1	2
7	20306	TOP BAND ASSY	1	2
8	11502	UPPER REAR PANEL	1	2
9	10321	RIGHT SIDE PANEL	1	2
10	STD-1004-08S6N	SCREW	12	2,3,4,5
11	11040	LOWER REAR PANEL	1	2
12	STD-1361	KNURLED SCREW	4	2
13	20511	BASE & PEDESTAL ASSY	1	2
14	10216	REAR LABEL	1	2
15	10322	LEFT SIDE PANEL	1	2
16	10970	RECEPTACLE LABEL	1	2
17	STD-1240-4	CAP PLUG	1	2
18	STD-1030	RETAINING RING	1	3
19	20103	REED SWITCH ASSY	1	3
20	STD-1383	GROMMET	1	3
21	20066	CUTTER SHAFT ASSY	1	3
22	20642	CUTTER SUPPORT ASSY	1	3
23	20553	CUTTER ASSY	1	3
24	20760	STRONG BACK ASSY	1	3
25	11304	DEFLECTOR PLATE	1	3
26	11301	SLICER	1	3
27	11303	DIAPHRAGM	1	3
28	11302	PISTON	1	3
29	STD-1387-10-3	KNURLED SCREW	2	3
30	20277	NOZZLE ASSY	1	3
31	11300	CYLINDER	1	3
32	11252	NOZZLE HOLD DOWN	2	3
33	STD-1020-14-AZ	NUT	3	5
34	STD-1012-14Z-A	LOCKWASHER	12	3,4,5
35	20644	MAIN DRIVE & MOTOR ASSY	1	3
36	STD-1440	LOCTITE	AR	2,3,4,5
37	11017	CHARGING STUD	1	3
38	STD-1002-14Z-5	SCREW	1	3
39	STD-1014-14	THUMB NUT	2	3
40	20645	WATER SYSTEM ASSY	1	3
41	STD-1002-14Z-8	BOLT	4	3
42	20682	FRAME ASSY	1	3
43	20666	POWER SUPPLY ASSY	1	3
44	STD-1001-08Z-12M	SCREW	4	3,5
45	STD-1548-10-ZA	COUNTERSUNK LOCKWASHER	4	3
46	20646	PRODUCT SYSTEM ASSY	1	3
47	STD-1733	ROCKER SWITCH	1	4
48	11525	LOGO	1	2
49	STD-1728	REFILL LIGHT	1	4
50	STD-1674	READY LIGHT	1	4
51	STD-1729	ERROR LIGHT	1	4
52	STD-1622	SWITCH	1	4
53	STD-1015-4C-12	EXPANSION PIN	2	4
54	STD-1113-2T	CABLE TIE	18	4
55	STD-1020-08-AZ	NUT	19	3,4,5
56	STD-1011A-08	LOCKWASHER	15	3,4,5
57	STD-1021-06-C-G	NUT	2	4
58	20681	DISPLAY INTERCONNECT CABLE	1	4
59	11158	MAGNET PLATE	1	4
60	11499	SPACER	4	3
61	STD-1125	CONDENSER BRACKET	1	4
62	20119	CONDENSER SUPPORT	1	4
63	STD-1117	CONDENSER	1	4
64	STD-1222	GROUND CLIP	1	4
65	10702	INSULATION	1	4
66	STD-1000-06Z-20M	SCREW	2	4
67	10318	FRONT COVER STUD	2	5
68	20647	MAIN WIRE HARNESS	1	Not shown
69	11297	PLUNGER SHAFT GROMMET	1	3
70	11531	INLET WATER HOSE	1	Note 1
71	STD-1197-3	BREATHER PLUG	1	Note 1
72	STD-1320	SPACER	AR	3
73	20368	TRANSFER TRAY ASSY	1	Note 1
75	STD-1224	SWITCH	1	4
76	10701	SWITCH COVER	1	4
77	STD-1704-06Z-6M	SCREW	2	4
78	11324	HOPPER SCREEN	1	5
79	STD-1704-06E-6M	SCREW	2	4
80	STD-1743-06E-16	THREADED SPACER	2	4
81	11129	REFILL LABEL	1	2
82	11128	KEEP ME CLEAN LABEL	1	2
83	STD-1001-035-4N	SCREW	2	2
84	STD-1002-14Z-12	BOLT	4	4
85	STD-10108-14RZ	WASHER	4	4
86	STD-1001-08Z-4M	SCREW	2	5
87	STD-1000-08Z-10M	SCREW	2	4,5
88	STD-1000-06Z-6M	SCREW	4	5
89	STD-1020-06-AZ	NUT	4	5
90	STD-1011A-06	LOCKWASHER	4	5
91	11344	BRACKET	1	5
92	20697	DISPLAY/SWITCH BOARDS ASSY	1	5
93	11503	LABEL	1	4
94	STD-1002-14Z-8	BOLT	3	2
95	STD-1010A-14RZ	WASHER	3	2
96	STD-1744-08-4	PHENOLIC SPACER	4	5
97	20692	MAIN PC BOARD ASSY	1	5
98	STD-1000-8Z-16M	SCREW	2	5
99	STD-1002-15Z-16-5	SCREW	4	3
100	STD-1012-15Z-A	LOCKWASHER	4	3
101	11511	LABEL (FRY SIZE)	1	2
102	11512	DISPLAY/ERROR CODES	1	2
103	11513	BUZZER LABEL	1	2
104	STD-1744-08-8	PHENOLIC SPACER	4	5
105	STD-1704-08E-10M	SCREW	5	5
106	STD-1744-08-6	PHENOLIC SPACER	9	5
107	STD-1590-2	SOLID STATE RELAY	2	4
108	STD-1002-14E-14	BOLT	1	5
109	STD-1627	FAN	1	5
110	STD-1021-08-C-6	NUT	2	5
111	STD-5227-29	SPACER	2	5
112	STD-1590-1	SOLID STATE RELAY	5	4
113	STD-1591-1	HEAT TAPE	1	5
114				
115				
116				
117				
118				
119				
120				
121				

OPTIONAL ACCESSORIES

PART NUMBER	DESCRIPTION
11309	1/4" CRINKLE CUT SLICER
11358	5/16" STRAIGHT CUT SLICER
11364	COTTAGE FRY SLICER
11370	STEAK FRY SLICER
11376	5/16" CRINKLE CUT SLICER
11422	STEAK FRY (5 WIRE) SLICER
11439	ONION RING SLICER
11445	5/16" STRAIGHT CUT SLICER
11492	DICE SLICER
20567	CONVEYOR INSTALLATION KIT - LONG
20568	CONVEYOR INSTALLATION KIT - SHORT
20449	CONVEYOR HOLD DOWN KIT

REFERENCE DOCUMENTS

PART NUMBER	DESCRIPTION
30109	550A CONNECTION SCHEMATIC DIAGRAM
30106	WATER SYSTEM CONNECTION SCHEMATIC

NOTE:

1. ITEMS 27, 28, 70, 71 AND 73 TO BE INCLUDED IN SHIPPING CONTAINER ASSY. SEE DRAWINGS 20294 AND 20295.

FIGURE 6-1A
MODEL 550A RUSSET FRIES DISPENSER COMPLETE SYSTEM

6-1

Figure 6-1A MODEL 550A RUSSET FRIES DISPENSER COMPLETE SYSTEM

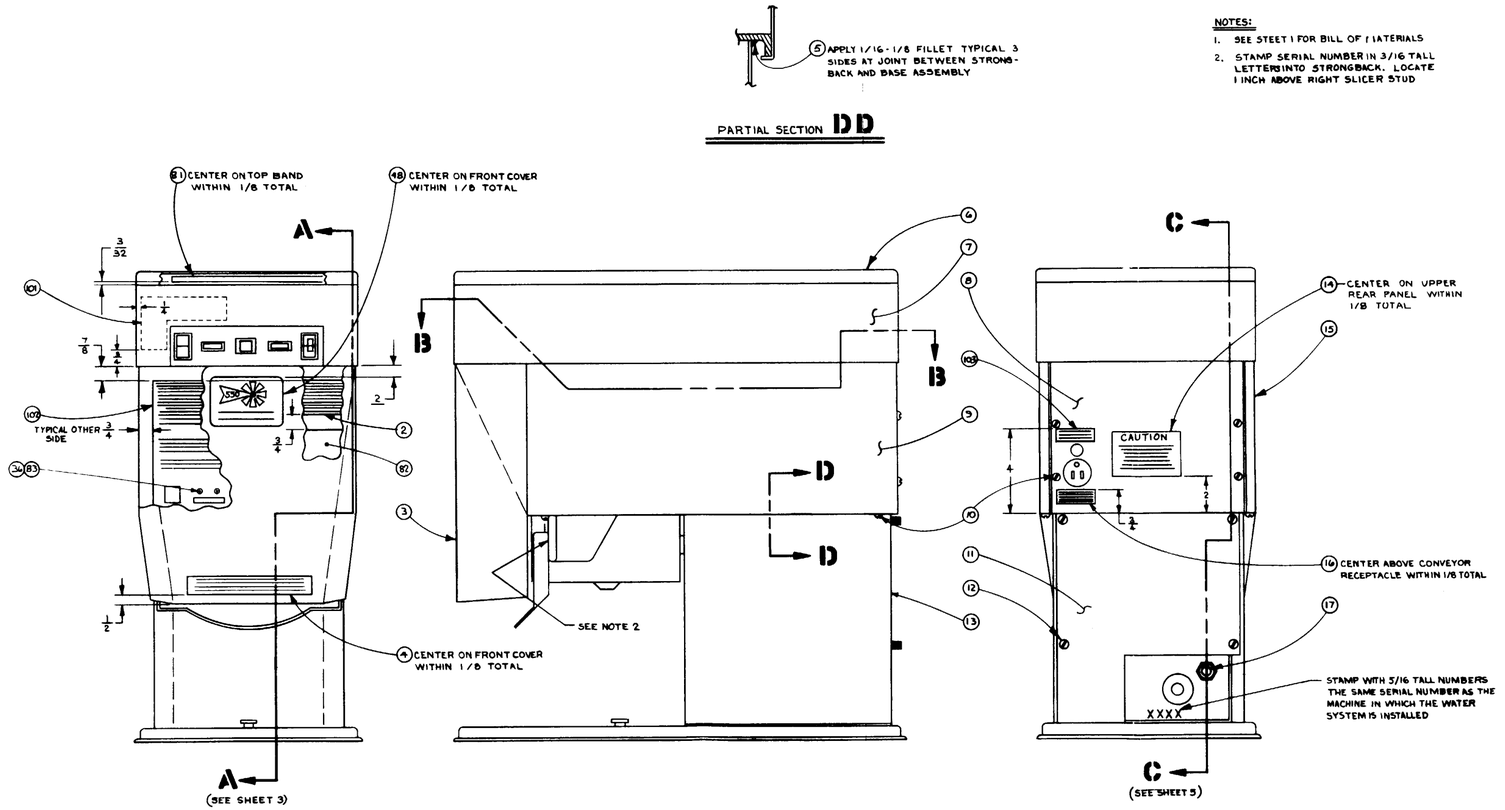


FIGURE 6-1B
MODEL 550A RUSSET FRIES DISPENSER COMPLETE SYSTEM

Figure 6-1B MODEL 550A RUSSET FRIES DISPENSER COMPLETE SYSTEM

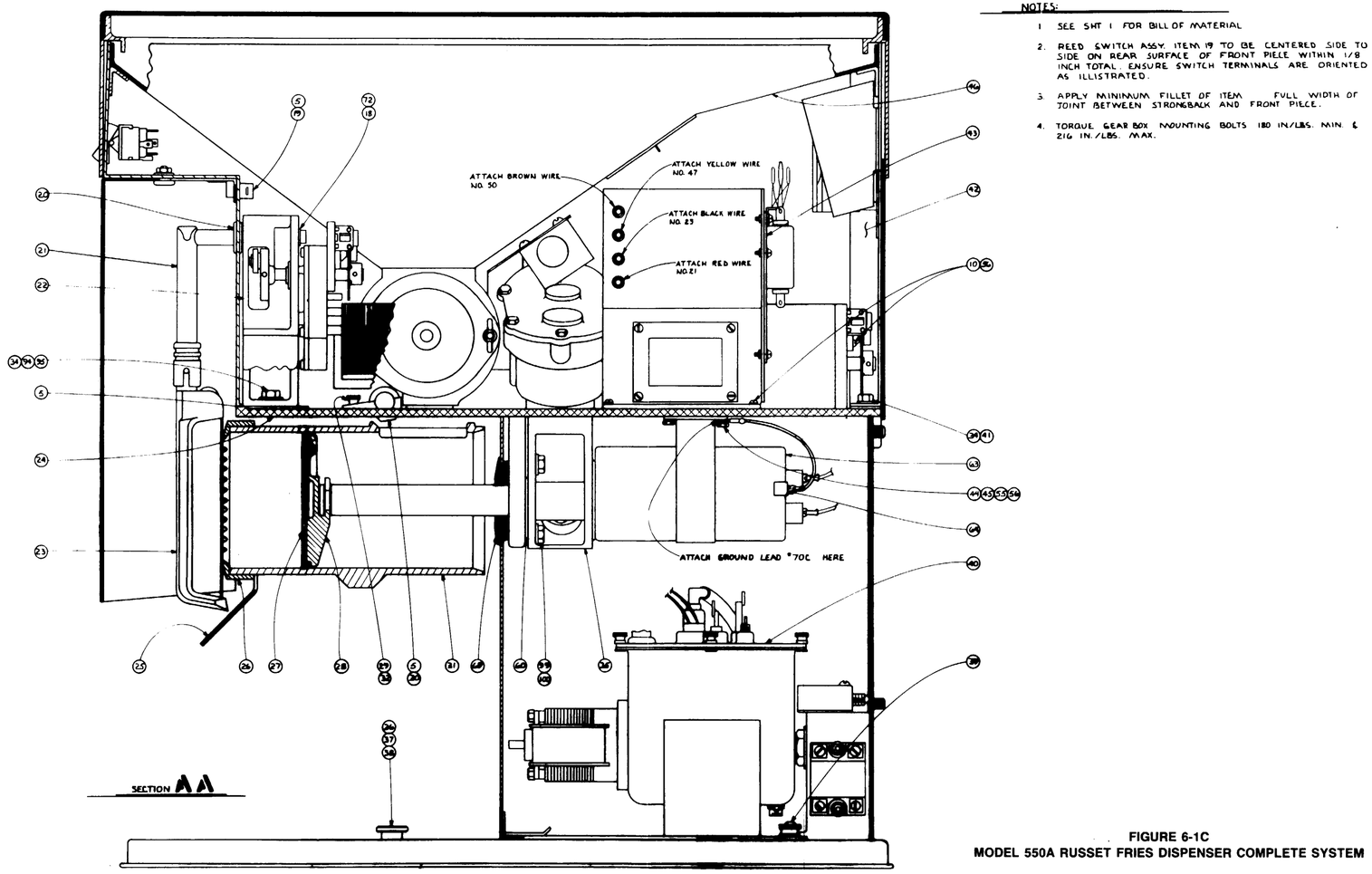


FIGURE 6-1C
MODEL 550A RUSSET FRIES DISPENSER COMPLETE SYSTEM

Figure 6-1C MODEL 550A RUSSET FRIES DISPENSER COMPLETE SYSTEM

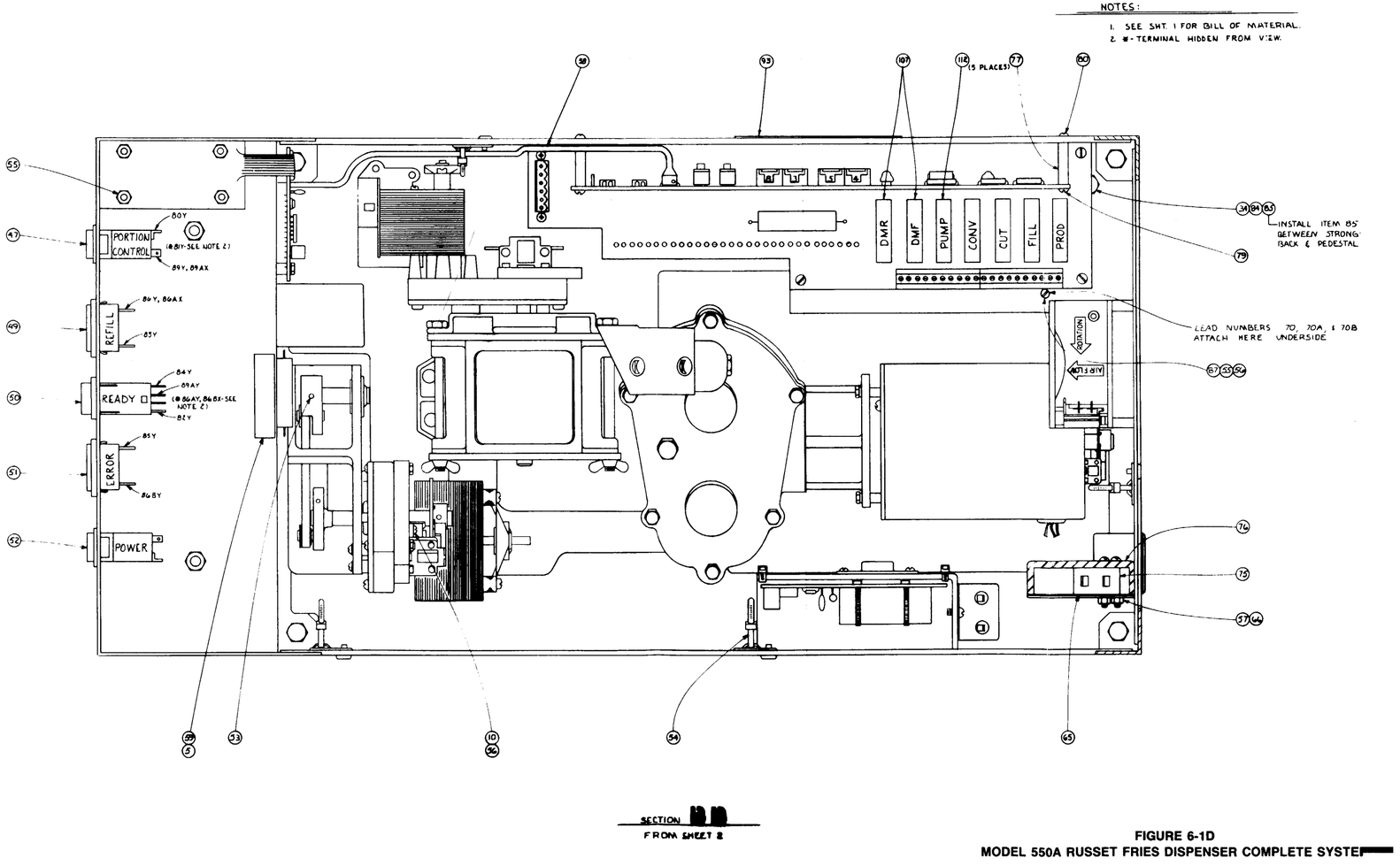


FIGURE 6-1D
MODEL 550A RUSSET FRIES DISPENSER COMPLETE SYSTEM

Figure 6-1D MODEL 550A RUSSET FRIES DISPENSER COMPLETE SYSTEM

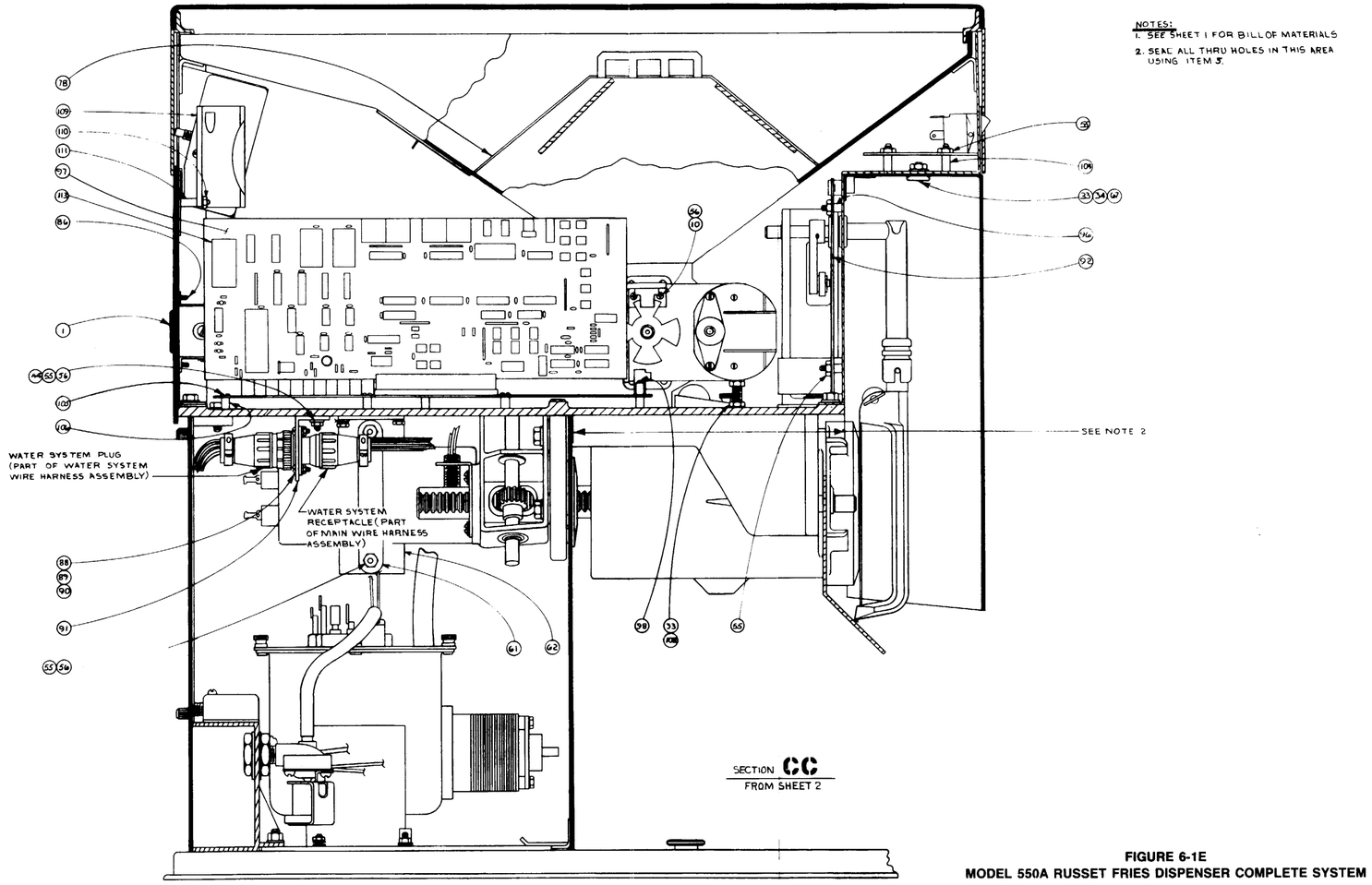


FIGURE 6-1E
MODEL 550A RUSSET FRIES DISPENSER COMPLETE SYSTEM

Figure 6-1E MODEL 550A RUSSET FRIES DISPENSER COMPLETE SYSTEM

DRY PRODUCT SYSTEM ASSEMBLY

ITEM	QUANTITY	PART NO.	DESCRIPTION
1	1	20653	Sensor Disc
2	2	STD-1020-08A-Z	Nut
3	1	11464	Mounting Plate
4	2	STD-1020-10-A-Z	Nut
5	2	STD-1011-A-Z-14	Lockwasher
6	1	STD-1633-3	Switch Assembly Bracket
7	1	20661	Proximity Switch Assembly (Part of Wiring Harness)
8	1	11335	Switch Bracket
9	2	STD-1000-14Z-28M	Screw
10	2	1004-8Z-18M	Screw
11	6	STD-1011-A-08	Lockwasher
12	4	STD-1000-08Z-6M	Screw
13	2	STD-1274-14	Wing Nut
14	As Req'd.	STD-1490-1	Vibra-tite
15	2	11007	Meter Hopper End
16	1	20247	Meter Rotor Assembly
17	1	20252	Product Hopper Assembly
18	1	10844	Meter Motor Mount
19	2	STD-1002-145-56	Screw
20	1	11505	Motor
21	2	STD-1011-A-06	Lockwasher
22	2	STD-1000-06Z-06M	Screw

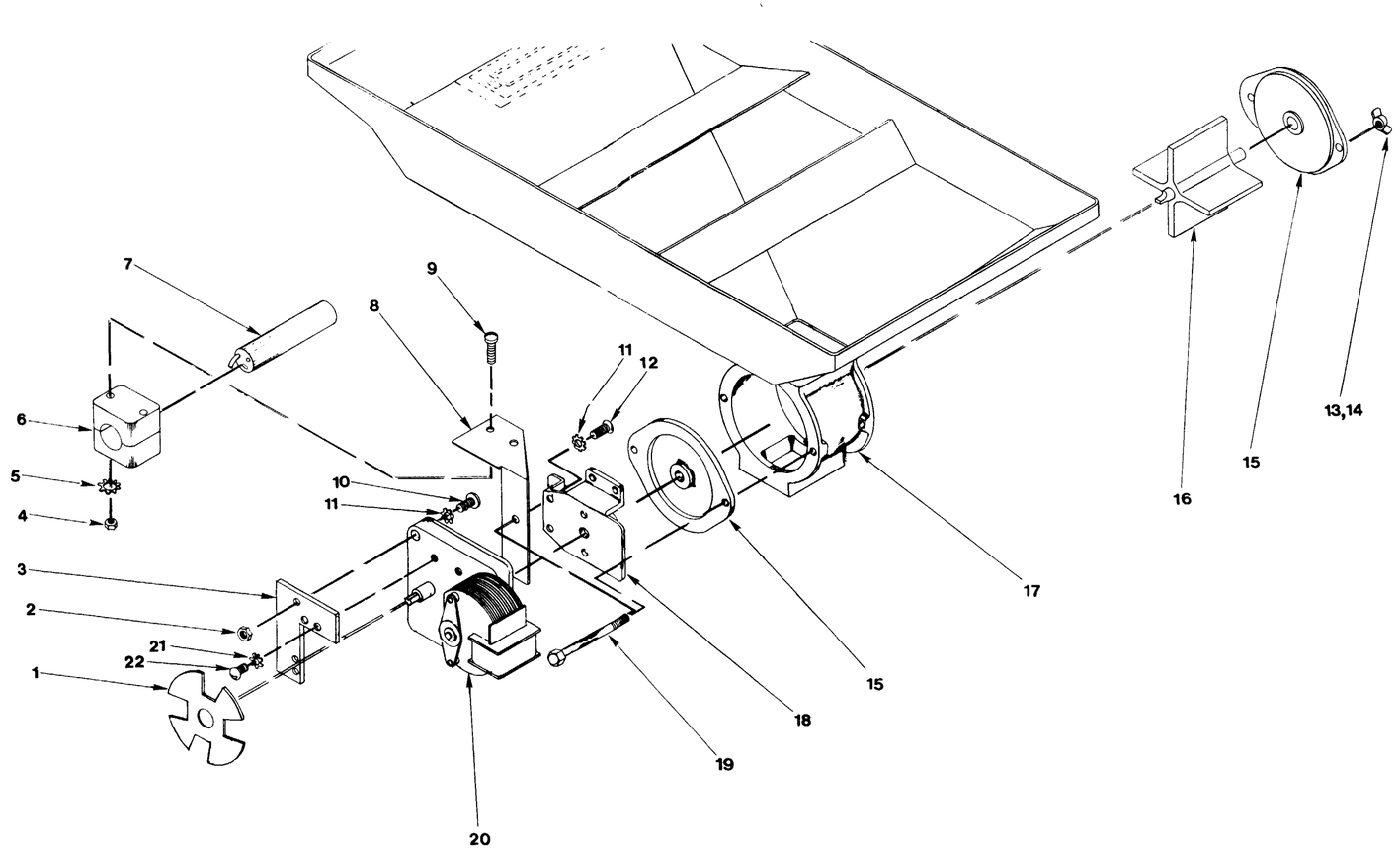


FIGURE 6-1F
MODEL 550A — DRY PRODUCT SYSTEM

Figure 6-1F MODEL 550A - DRY PRODUCT SYSTEM

ITEM	PART NUMBER	DESCRIPTION	QTY.	SHEET
1	STD 1349	CONVEYOR RECEPTACLE	1	3
2	11112	NAME PLATE	1	2
3	20095	FRONT COVER ASSEMBLY	1	2
4	10362	FRONT WARNING LABEL	1	2
5	STD 1249	SEALANT	AS REQ'D.	2, 3, 4, 5
6	10976	TOP COVER	1	2
7	20306	TOP BAND ASSEMBLY	1	2
8	11502	UPPER REAR PANEL	1	2
9	10321	RIGHT SIDE PANEL	1	2
10	STD 1000-08S-6M	SCREW	AS REQ'D.	2,4
11	11040	LOWER REAR PANEL	1	2
12	STD 1361	KNURLED SCREW	4	2
13	20511	BASE & PEDESTAL	1	2
14	10216	REAR LABEL	1	2
15	10322	LEFT SIDE PANEL	1	2
16	10970	RECEPTACLE LABEL	1	2
17	STD 1240-4	CAP PLUG	1	2
18	STD 1030	RETAINING RING	1	2
19	20103	REED SWITCH ASSEMBLY	1	3
20	STD 1383	GROMMET	1	3
21	20066	CUTTER SHAFT ASSEMBLY	1	3
22	20642	CUTTER SUPPORT ASSEMBLY	1	3
23	20553	CUTTER ASSEMBLY	1	3
24	20760	SST STRONGBACK	1	3
25	11304	DEFLECTOR PLATE	1	3
26	11301	SLICER	1	3
27	11303	DIAPHRAGM	1	3
28	11302	PISTON	1	3
29	STD 1387-10-3	KNURLED SCREW	2	3
30	20277	NOZZLE ASSEMBLY	1	3
31	11300	CYLINDER	1	3
32	11252	NOZZLE HOLD DOWN	2	3
33	STD 1020-14-AZ	NUT	3	5
34	STD 1012-14Z-A	LOCKWASHER	12	3,4,5
35	20744	MAIN DRIVE ASSEMBLY	1	3
36	STD 1020-15-A-S	NUT	4	3
37	STD 1012-15S-A	LOCKWASHER	4	3
38	STD 1440	LOCTITE	AS REQ'D.	2,3,4,5
39	11017	CHARGING STUD	1	3
40	STD 1002-14S-6	SCREW	1	3
41	STD 1014-14	THUMB NUT	2	3
42	20645	WATER SYSTEM ASSEMBLY	1	3
43	STD 1002-14S-6	SCREW	4	3
44	20682	FRAME ASSEMBLY	1	3
45	11488	POWER SUPPLY	1	3
46	20738	CORCOM ASSEMBLY	1	4
47	STD 1001-08Z-12M	SCREW	4	5
48	STD 1548-10-ZA	COUNTERSUNK LOCKWASHER	4	5
49	20646	PRODUCT SYSTEM ASSEMBLY	1	3
50	STD 1733	ROCKER SWITCH	1	4
51	11525	550A LOGO	1	2
52	STD 1728	REFILL LIGHT	1	4
53	11578	DISPENSE SWITCH ASSEMBLY	1	4
54	STD 1729	ERROR LIGHT	1	4
55	STD 1622	ON/OFF SWITCH	1	4
56	STD 1015-4C-12	EXPANSION PIN	1	4
57	STD 1113-2T	CABLE TIE	AS REQ'D.	4
58	STD 1020-08-AZ	NUT	14	4,5
59	STD 1011A-08	LOCKWASHER	AS REQ'D.	4,5
60	STD 1021-06-C-G	NUT	2	4
61	20681	DISPLAY INTERCONNECT CABLE	1	4
62	11158	MAGNET PLATE	1	4
63	STD 1125-4	CONDENSOR BRACKET	1	5
64	20119	CONDENSOR SUPPORT	1	5
65	STD 1117-2	CONDENSOR	1	5
66	10702	INSULATION	1	4

ITEM	PART NUMBER	DESCRIPTION	QTY.	SHEET
67	STD 1000-06Z-20M	SCREW	2	4
68	10318	FRONT COVER STUD	2	5
69	20743	MAIN WIRE HARNESS	1	4
70	11297	PLUNGER SHAFT GROMMET	1	3
71	11531	INLET WATER HOSE	1	See Note 1
72	STD 1320	SPACER	AS REQ'D.	3
73	20368	TRANSFER TRAY ASSEMBLY	1	See Note 1
74	STD 1224	INTERLOCK SWITCH	1	4
75	10701	SWITCH COVER	1	4
76	STD 1704-06Z-6M	SCREW	2	4
77	11324	HOPPER SCREW	1	5
78	STD 1704-06Z-6M	SCREW	2	4
79	STD 1743-06P-16	THREADED SPACER	2	4
80	11129	REFILL LABEL	1	2
81	11128	KEEP ME CLEAN LABEL	1	2
82	STD 1001-04S-4M	SCREW	2	2
83	STD 1002-14Z-12	SCREW	4	4
84	STD 1001-08Z-4M	SCREW	2	3
85	STD 1000-06Z-6M	SCREW	4	5
86	STD 1020-06-AZ	NUT	4	5
87	STD 1011A-06	LOCKWASHERS	4	5
88	11344	WATER CONNECTOR BRACKET	1	5
89	20697	DISPLAY/SWITCH BOARDS ASSEMBLY	1	5
90	11503	550A PC BOARD LABEL	1	4,5
91	STD 1002-14S-8	SCREW	2	3
92	STD 1010A-14RZ	FLAT WASHER	2	3
93	STD 1744-08-4	PHENOLIC SPACER	4	5
94	20692	550A MAIN PC BOARD ASSEMBLY	1	5
95	11511	LABEL (FRY SIZE)	1	2
96	11512	DISPLAY/ERROR CODES	1	2
97	11513	BUZZER LABEL	1	2
98	STD 1744-08-8	PHENOLIC SPACER	4	5
99	STD 1704-08E-6M	SCREW	8	5
100	STD 1795-1	MALE-FEMALE THREADED SPACER	8	5
101	STD 1590-2	SOLID STATE RELAY 240V	2	4
102	STD 1000-14S-14M	SCREW	1	5
103	11577	PRODUCT SYSTEM ADJUSTER	1	5
104	STD 1627	FAN	1	4
105	STD 5227-33	SPACER	2	4
106	STD 1021-08-C-G	NUT	4	4
107	STD 5227-29	SPACER (FAN)	2	4
108	STD 1590-1	SOLID STATE RELAY 110V	5	4
109	STD 1591-1	HEAT LABEL	1	5
110	10839	SLICER STUD	2	5
111	STD 1016-5-7S	DOWEL PIN	2	4
112	STD 1629-2	CABLE MOUNTS	4	4
113	STD 1000-08Z-5M	SCREW	4	4
114	11541	RELAY LABEL (240V)	2	4
115	11542	RELAY LABEL (110V)	5	4
116	11573	BASE GASKET	1	5
117	20722	SLICER ENCODER	1	5
118	STD 1002-10S-6	HEX HEAD SCREW	18	5
119	11398	LONG HOLD DOWN	2	3
120	11399	SHORT HOLD DOWN	2	5
121	STD 1721-1	PHONE JACK	1	3
122	STD 1210	COUNTER	1	4
123	STD 1000-8Z-10M	SCREW	2	4,5
124	20745	DRIVE MOTOR HALL EFFECT ASSY	1	4
125	STD 1020-08AS	NUT	2	4,5
126	11566	STRONGBACK INSERT	1	3

OPTIONAL ACCESSORIES		
PART NUMBER		DESCRIPTION
REG.	KEY'ED	
11309		¼" CRINKLE CUT SLICER
11358	20708	5/16" STRAIGHT CUT SLICER
11364	20706	COTTAGE FRY SLICER
11370	20710	STEAK FRY SLICER
11376	20709	5/16" CRINKLE CUT SLICER
11422		STEAK FRY (5 WIRE) SLICER
11439	20711	ONION RING SLICER
11445	20707	3/16" STRAIGHT CUT SLICER
11492		DICE SLICER
11448	20705	HASH BROWN SLICER
11490	20726	TORTILLA SLICER
20567		CONVEYOR INSTALLATION KIT — LONG
20568		CONVEYOR INSTALLATION KIT — SHORT
20449		CONVEYOR HOLD DOWN KIT

REFERENCE DOCUMENTS	
PART NUMBER	DESCRIPTION
30128	550A CONNECTION SCHEMATIC DIAGRAM
30106	WATER SYSTEM CONNECTION SCHEMATIC

NOTE:

1. ITEMS 27, 28, 71 & 73 TO BE INCLUDED IN SHIPPING CONTAINER ASSY., SEE DRAWINGS 20294 & 20295.
2. ON ITEM 111 USE ITEM 38 TO SECURE.
3. SECURE ITEM 117 WITH ITEM 5.

FIGURE 6-2A
MODEL 550A ASSEMBLY DRAWING

Figure 6-2A MODEL 550A ASSEMBLY DRAWING

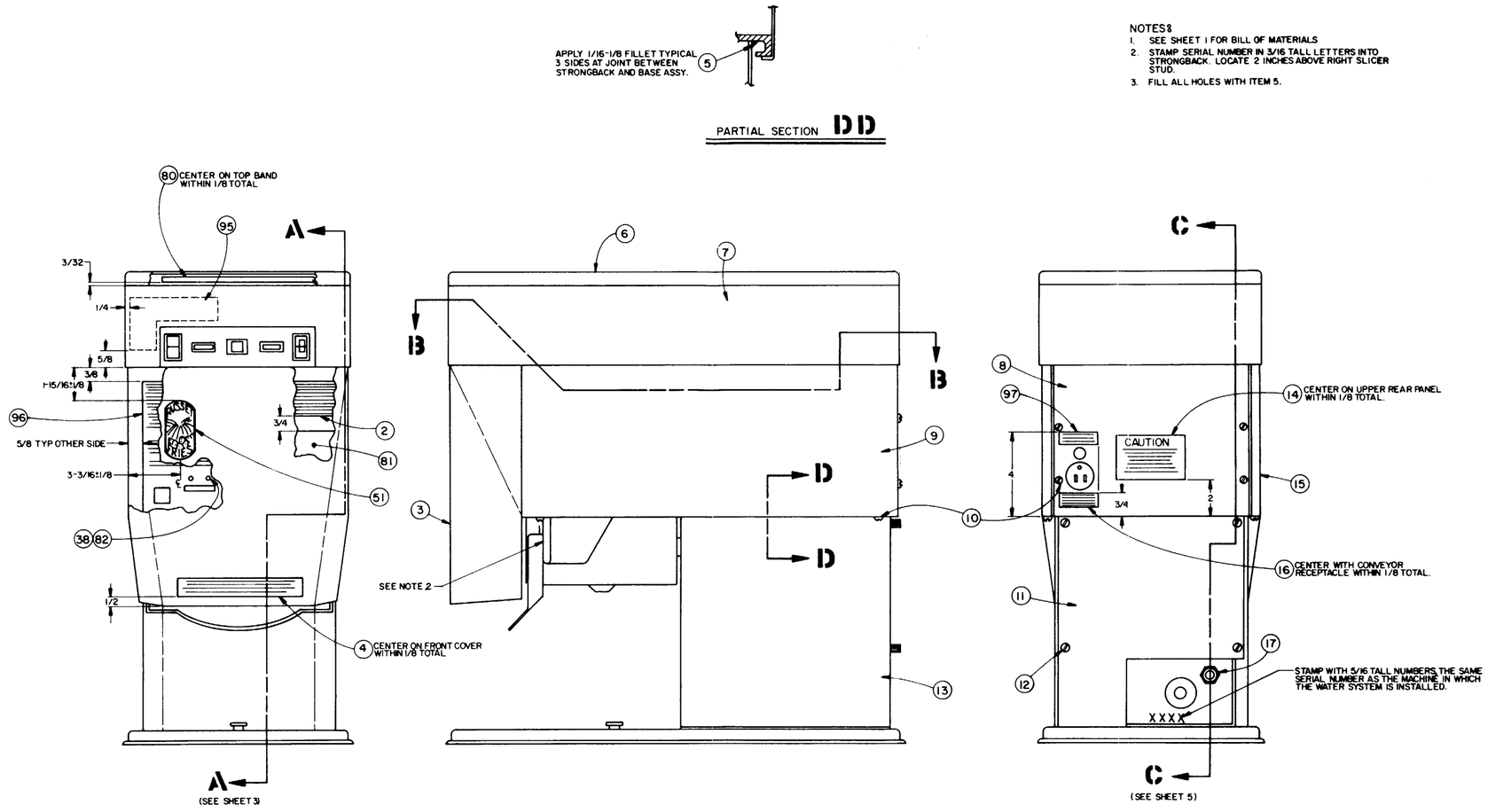
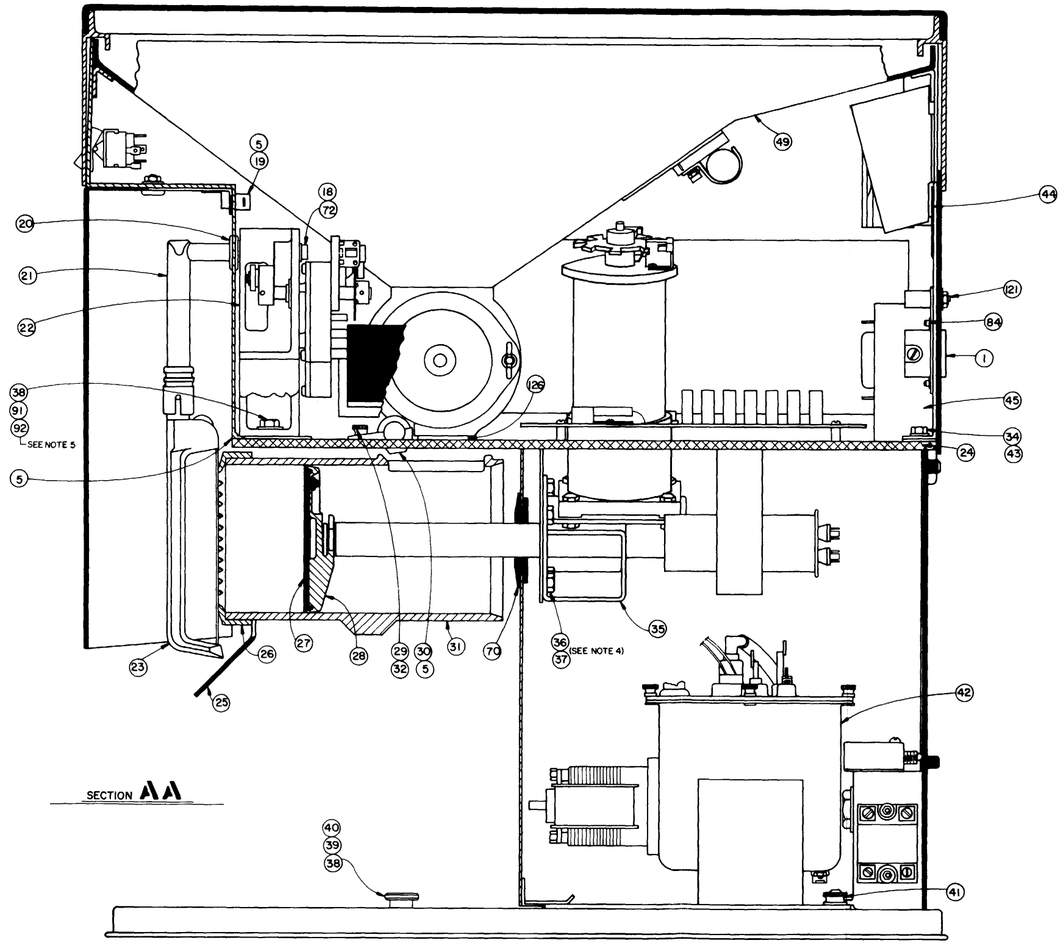


FIGURE 6-2B
MODEL 550A ASSEMBLY DRAWING

Figure 6-2B MODEL 550A ASSEMBLY DRAWING



NOTES:
1. SEE SHEET 1 FOR BILL OF MATERIAL.
2. REED SWITCH ASSY. ITEM 19 TO BE CENTERED SIDE TO SIDE ON REAR SURFACE OF FRONT PIECE WITHIN 1/8" TOTAL. ENSURE SWITCH TERMINALS ARE ORIENTED AS ILLUSTRATED.
3. APPLY MINIMUM FILLET OF ITEM 5 FULL WIDTH OF JOINT BETWEEN STRONGBACK AND FRONT PIECE.
4. TORQUE GEAR BOX MOUNTING NUTS 180 IN/LBS. MIN. & 216 IN/LBS. MAX.
5. USE FLAT WASHERS AS NEEDED.

FIGURE 6-2C
MODEL 550A ASSEMBLY DRAWING

6-17

Figure 6-2C MODEL 550A ASSEMBLY DRAWING

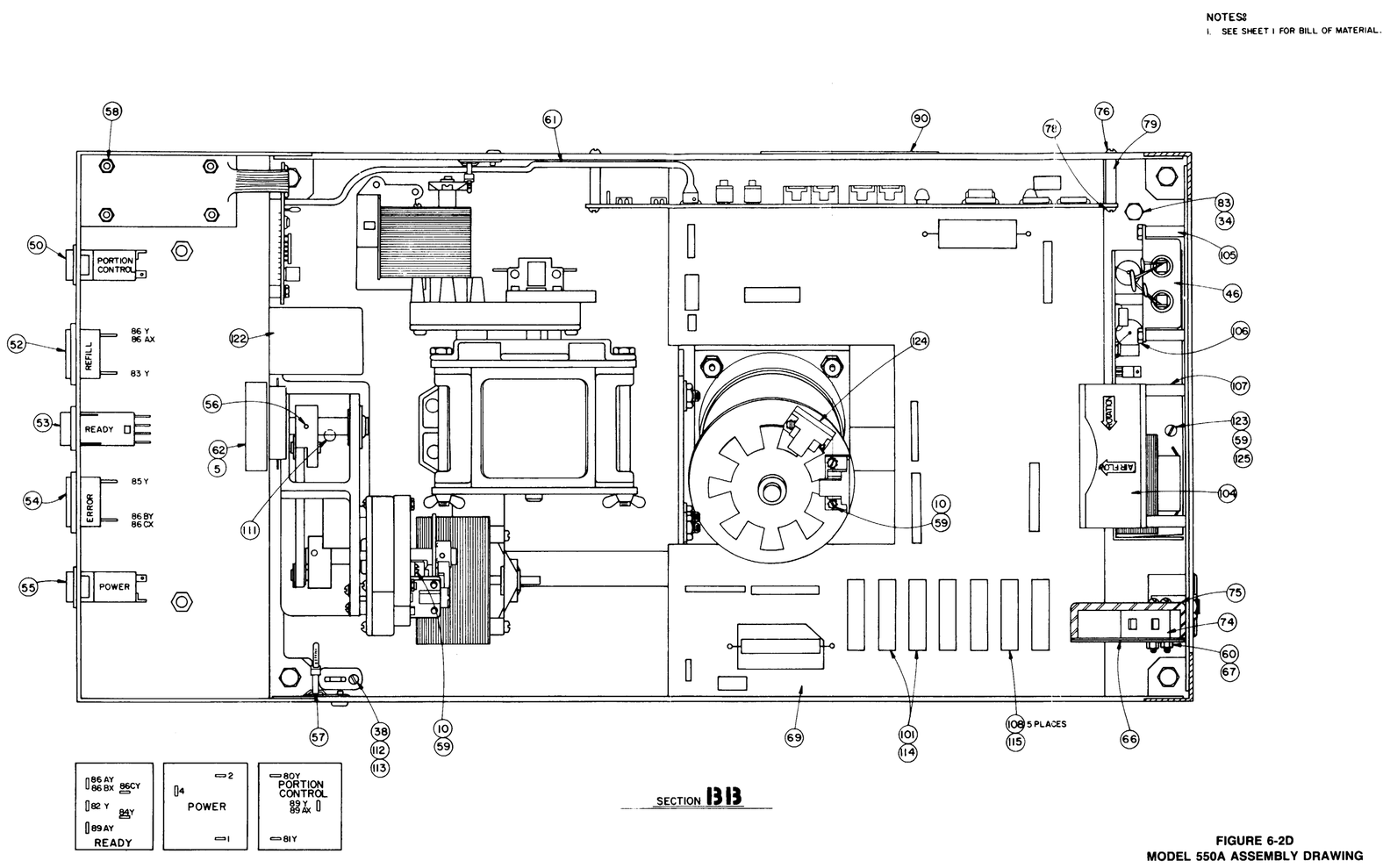


FIGURE 6-2D
MODEL 550A ASSEMBLY DRAWING

Figure 6-2D MODEL 550A ASSEMBLY DRAWING

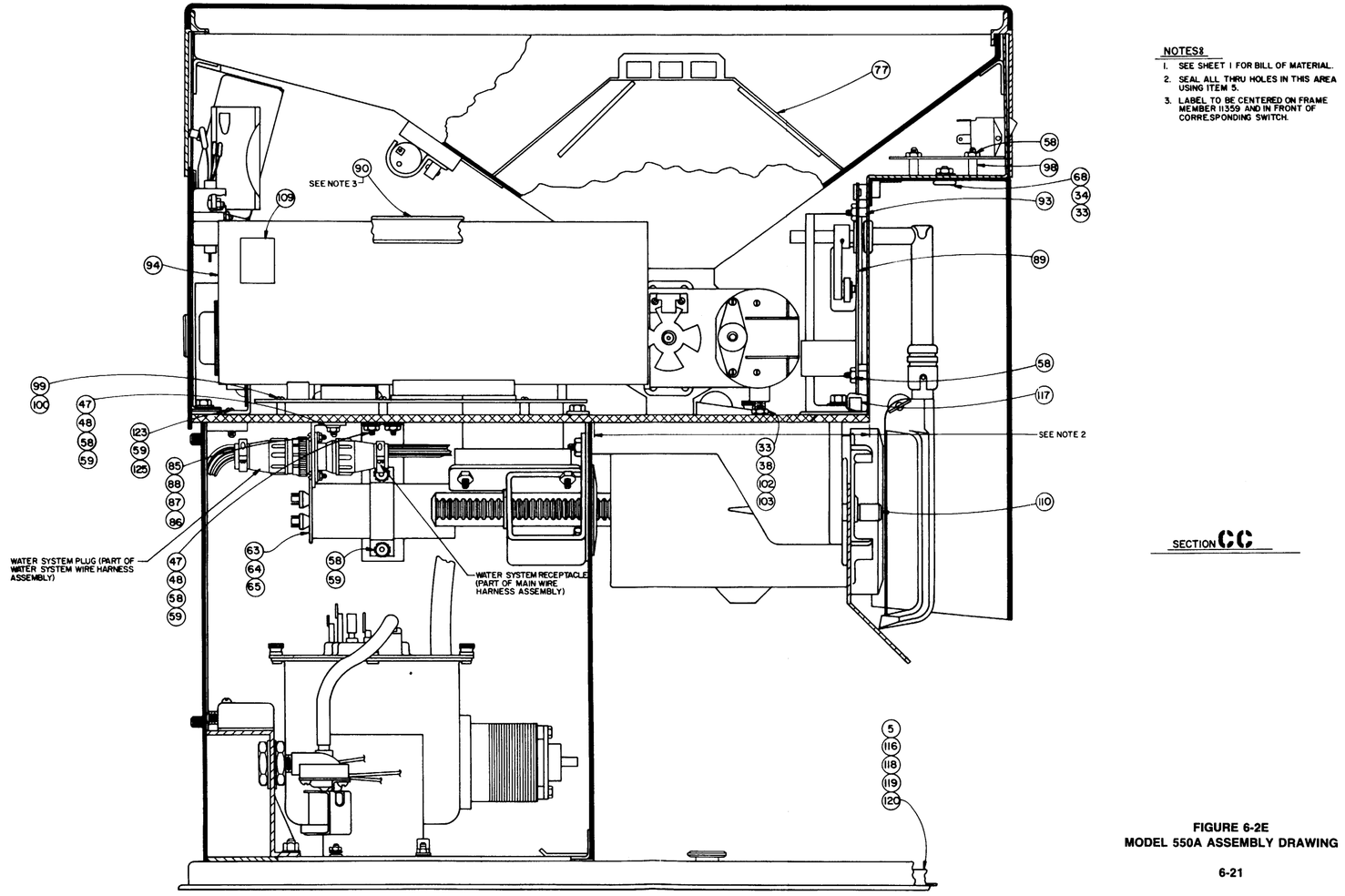


FIGURE 6-2E
MODEL 550A ASSEMBLY DRAWING

6-21

Figure 6-2E MODEL 550A ASSEMBLY DRAWING

DRY PRODUCT SYSTEM ASSEMBLY

ITEM	QUANTITY	PART NO.	DESCRIPTION
1	1	20653	Sensor Disc
2	2	STD-1020-08A-Z	Nut
3	1	11464	Mounting Plate
4	1	STD-1020-10-A-Z	Nut
5	1	STD-1010-B-10RZ	Flat Washer
6	1	STD-1794	Proximity Switch Brace
7	1	20661	Proximity Switch Assembly (Part of Wiring Harness)
8	1	STD-1114-03-C	Cable Holder
10	2	1004-8Z-18M	Screw
11	6	STD-1011-A-08	Lockwasher
12	4	STD-1000-08Z-6M	Screw
13	2	STD-1274-14	Wing Nut
14	As Req'd.	STD-1490-1	Vibra-tite
15	2	11007	Meter Hopper End
16	1	20247	Meter Rotor Assembly
17	1	20737	Product Hopper Assembly
18	1	10844	Meter Motor Mount
19	2	STD-1002-145-56	Screw
20	1	11505	Motor
21	2	STD-1011-A-06	Lockwasher
22	2	STD-1000-06Z-06M	Screw

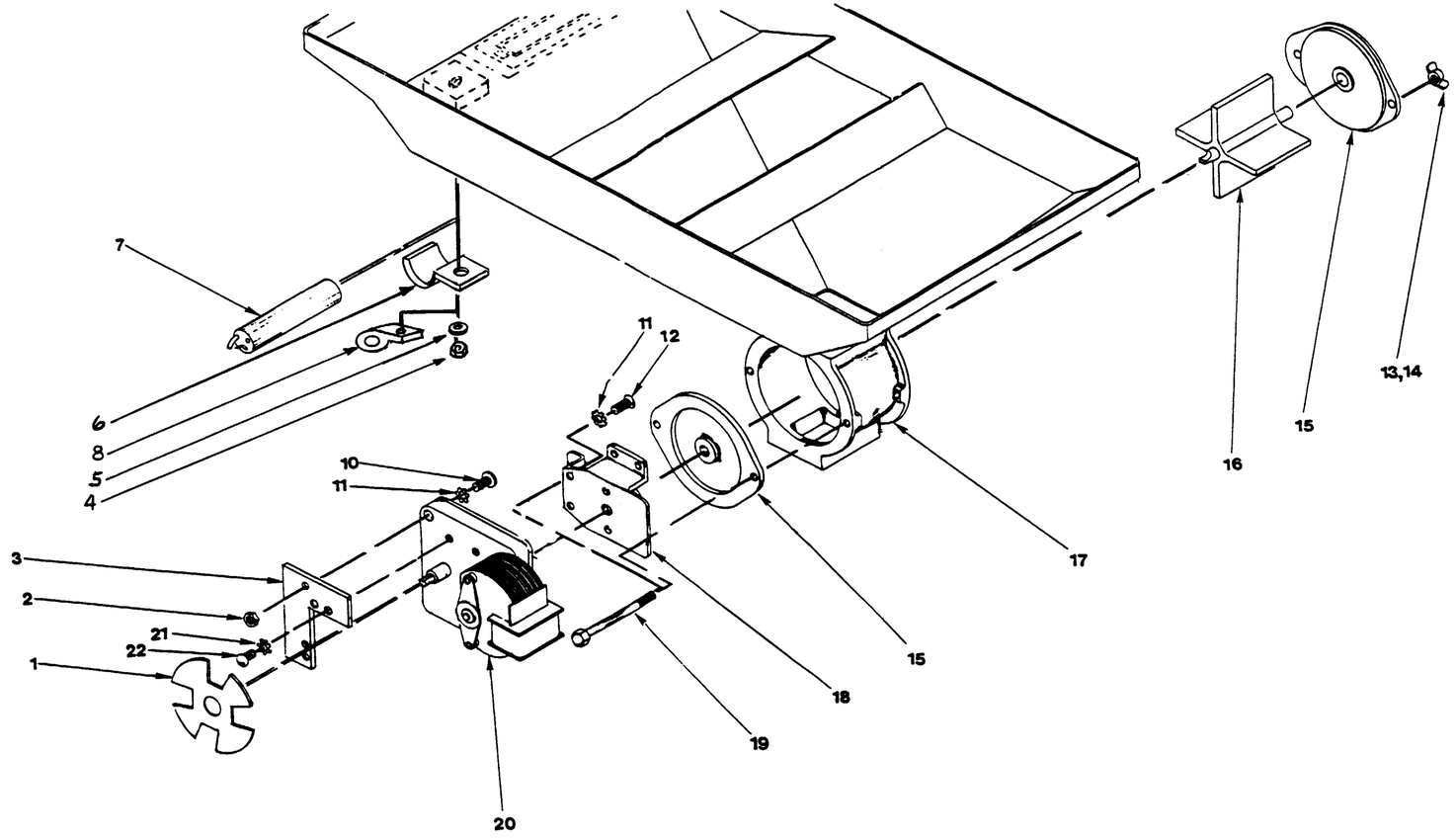


FIGURE 6-2F
MODEL 550A — DRY PRODUCT SYSTEM

Figure 6-2F MODEL 550A - DRY PRODUCT SYSTEM

1. ZERO ACTIVATED SWITCH
   CONDUCTING (0 VDC) AT REAR HARD STOP. TURNS OFF 2 MOTOR TURNS FORWARD OF REAR HARD STOP.

2. PRODUCT SYSTEM OPERATING SPECS.
   (IN COMPLETED MACHINE @ 120 VAC, 60 HZ) MOTOR ENERGIZED TIME — 3.50 SEC. MAX.

3. HIGH POT
   FINAL ASSEMBLED MACHINE WITH ALL INTERLOCK SWITCHES AND MAIN POWER SWITCH CLOSED MUST HAVE TEST POTENTIAL 1000VAC, 60 HZ APPLIED BETWEEN LIVE METAL PARTS AND DEAD METAL PARTS FOR ONE MINUTE MINIMUM WITHOUT BREAKDOWN.

4. CUTTER ACTIVATED SWITCH PINNING
   WITH CUTTER ARM TO LEFT OR RIGHT AT THE TURN AROUND POINT, CENTER TRAILING EDGE OF CUTTER VANE IN THE HALL EFFECT SWITCH AND PIN.

5. PRODUCT METERING VANE ACTIVATED SWITCH PINNING
   TIMED IN ASSEMBLED PRODUCT HOPPER. POSITION METERING VANE WITH FULL FLIGHT OPEN. CENTER LEADING EDGE OF VANE IN HALL EFFECT SWITCH AND PIN.

6. WATER SYSTEM SET POINTS
   (5 SHOT AVERAGE UNDER RAPID FIRE CONDITION WITH COLD INLET WATER.)

   TOTAL VOLUME — 432 ± 3 GRAMS
   FULL TIME — 18 ± 4 SECONDS @ 432 ± 3 GRAMS
   PUMP ENERGIZED TIME — 2.6 ± 0.3 SECONDS

7. PAUSE TIME DELAY TO BE SET AT 4 SECONDS ± 1 SECOND.

8. SERIALIZATION
   THE SERIAL NUMBER APPLIED TO EACH RUSSET FRIES DISPENSER ON THE NAMEPLATE IS A FOUR DIGIT NUMBER WHICH PROGRESSES ONE NUMBER WITH EACH RUSSET FRIES DISPENSER STARTING WITH NO. 7000.

   EXAMPLE:

   SERIAL NO. 7040
   -ORDER OF ASSEMBLY

9. TOTAL NOZZLE DISCHARGE VOLUME DISTRIBUTION LEFT TO RIGHT WHEN INSTALLED IN F/M
   STREAM VOLUMES MUST BE WITHIN 20 ML OF EACH OTHER.
   CENTER STREAM VOLUME — 75 ML TO 100 ML.

FIGURE 6-3
MODEL 550A CALIBRATION SPECIFICATIONS

Figure 6-3 MODEL 550A CALIBRATION SPECIFICATIONS

WATER SYSTEM ASSEMBLY

ITEM	QUANTITY	PART NO.	DESCRIPTION
1	1	STD-1232	Power Cord
2	1	STD-1644	Restrainer
3	2	STD-1000-06Z-20M	Screw
4	2	STD-1000-04Z-6M	Screw
5	1	STD-1059	Bulkhead Connector
6	1	11322	Utility Inlet Box
7	1	10702	Insulation
8	1	STD-1224	Switch
9	1	10701	Switch Cover
10	2	STD-1021-06-C-Z	Nut
11	2	STD-1011-A-Z-04	Lockwasher
12	2	STD-1020-04-A-Z	Nut
13	1	STD-1463	Solenoid Valve
14	1	STD-1465-8	Tubing
15	1	20413	Pump Housing Assembly
16	1	STD-1445-250	Tubing Clamp
17	1	STD-1199-8-14	Tubing
18	1	STD-1450	Pump Impeller
19	2	STD-1005-08A-3-1	Set Screw
21	4	STD-1014-08	Finger Nut
22	1	20519	Low Probe Assembly
23	1	20410	High Probe Assembly
24	1	STD-1464	Plastic Elbow
25	1	20672	Thermistor Assembly
26	1	11342	Cap
27	1	11454	Stabilizer Clamp
28	1	STD-1012-08-AS	Split Ring Lockwasher
29	1	STD-1020-08-AS	Nut
30	1	STD-1097	Heater
31	3	STD-1000-08Z-6M	Screw
32	6	STD-1011-AZ-08	Lockwasher
33	1	STD-1114-04-N	Cable Clamp
34	1	20583	Pump Motor Assembly
35	1	STD-1448	Pump Motor Gasket
36	As Req'd.	STD-1249	Sealant
37	1	20564	Water Tank Assembly
38	1	20495	Base
39	2	STD-1001-14Z-8M	Screw
40	4	STD-1020-08-A-Z	Nut
41	1	STD-1010-A-08-R-Z	Washer
42	1	STD-1114-07 N	Cable Clamp
43	1	STD-1584-1	Relay
44	As Req'd.	STD-1575	Heat Sink Grease
45	2	STD-1000-08Z-8M	Screw
46	1	STD-1012-06S-A	Lockwasher
47	1	STD-1000-06-S-6M	Screw
48	6	STD-1010A-08RS	Flatwasher
49	6	STD-1020-08-A-S	Nut

WATER SYSTEM ASSEMBLY - Continued

ITEM	QUANTITY	PART NO.	DESCRIPTION
51	1	STD-1087	Therm-O-Disc
52	2	STD-1011-A-06	Lockwasher
53	2	STD-1020-06-A-S	Nut
54	2	STD-1020-14-A-Z	Nut
55	2	STD-1011-A-S-14	Lockwasher

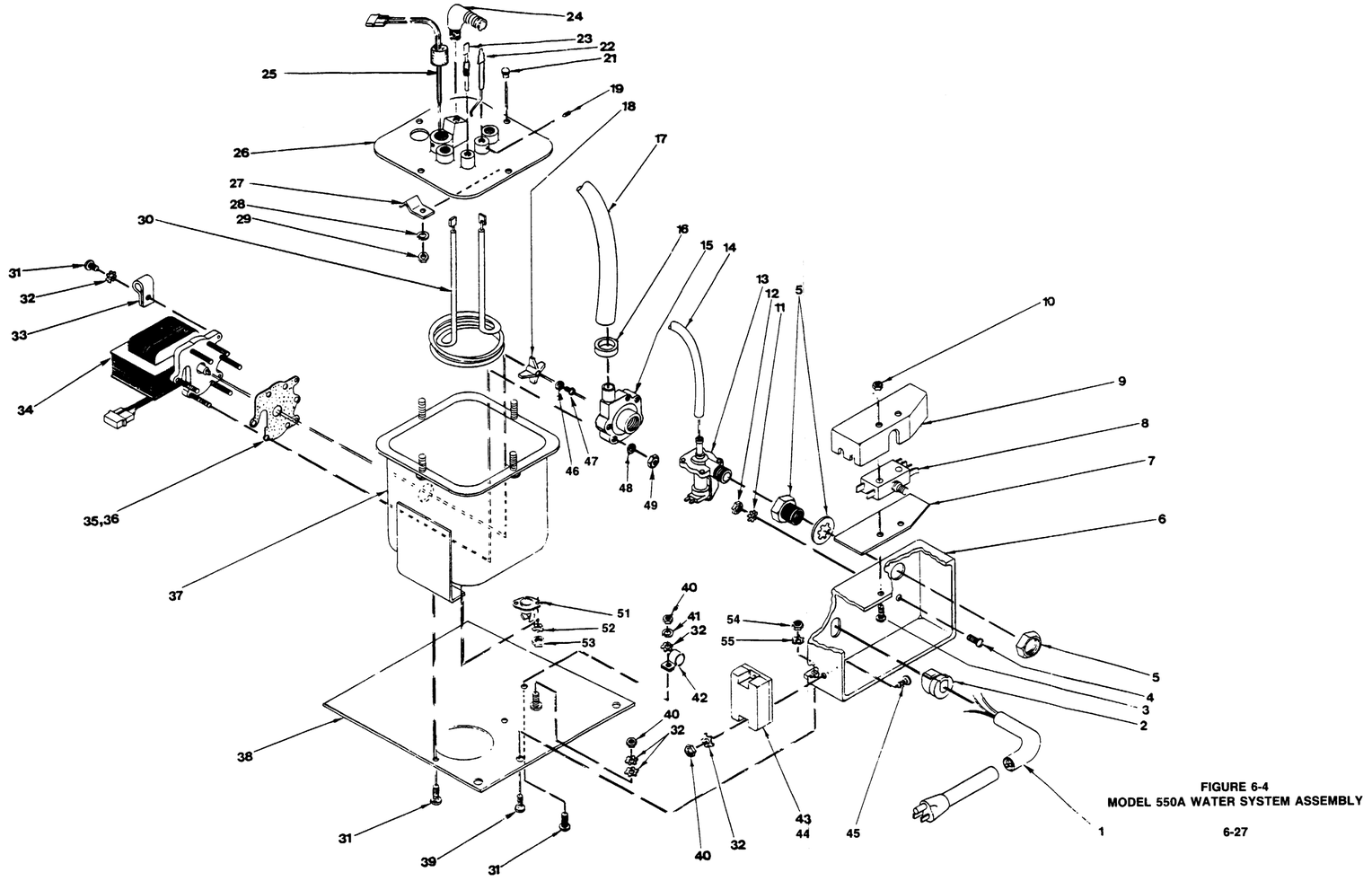


Figure 6-4 MODEL 550A WATER SYSTEM ASSEMBLY

CUTTER SUPPORT ASSEMBLY

ITEM	QUANTITY	PART NO.	DESCRIPTION
1	1	20288	Eccentric Assembly
2	As Req'd.	STD-1150	Loctite
3	3	STD-1081	Flanged Bearing
4	1	20507	Eccentric Linkage Assembly
5	1	20062	Eccentric Actuator Arm
6	2	STD-1022-3C	Retaining Ring
7	2	STD-1000-08Z-16M	Screw
8	1	11464	Sensor Mounting Plate
9	1	11466	Motor
10	1	11465	Cutter Support Casting
11	2	STD-1012-08Z-A	Lockwasher
12	5	STD-1000-08Z-7M	Screw
13	1	STD-1015-4C-20	Spring Pin
14	5	STD-1010B-08-RZ	Washer
15	5	STD-1010A-08-RZ	Washer
16	2	STD-1020-08Z-A	Nut
17	1	11598	Cutter Support Bushing

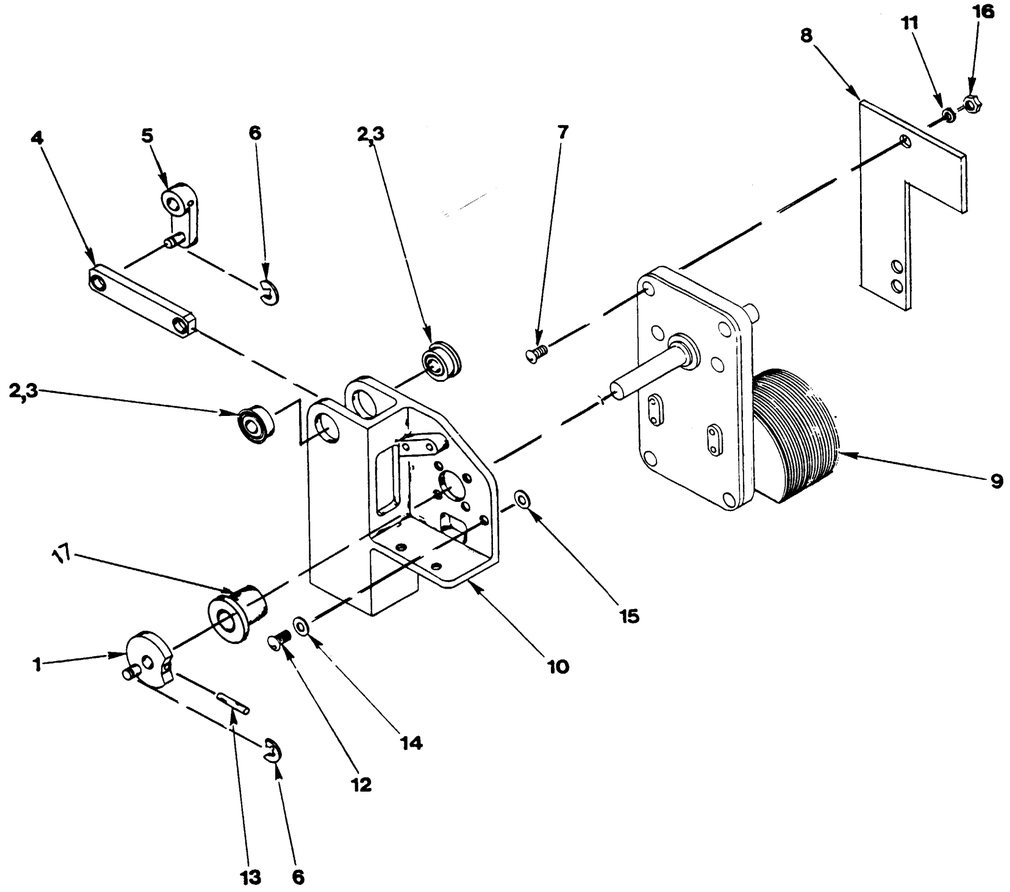


FIGURE 6-5
MODEL 550A CUTTER SUPPORT ASSEMBLY

Figure 6-5 MODEL 550A CUTTER SUPPORT ASSEMBLY

CHAPTER 7

DESCALING INSTRUCTIONS FOR 550 WATER SYSTEMS

1. Purchase locally (usually available in grocery stores) one of the products available to remove scale (lime and calcium) from coffee pots, sinks, dishwashers, etc.
2. A recommended product is ″Limeaway″ containing phosphoric acid and hydroxacetic acid. Follow directions on product label to mix solution for descaling. Use eye and hand protection as recommended.
3. Remove water system from RUSSET FRIES DISPENSER and drain water.
4. Remove lid hold down screws and lift lid enough to pour mixed descaling solution into tank. Fill tank approximately 1/4 above normal fill level and replace tank cap. Follow product instructions for length of time required to complete descaling process.

NOTE

Do not overfill tank and spill solution on water system pump and other parts.

If necessary, repeat Step 4 until scale is removed.

5. After descaling is complete, rinse tank and lid of all solution very thoroughly.
6. While tank is being cleaned, the nozzle should be immersed in a separate container and cleaned in the same way as the water system.
7. After reassembling the tank and lid, place water system in the RUSSET FRIES DISPENSER and run a minimum of six shots of water through system checking volume and temperature before returning machine to service.

TROUBLESHOOTING

Troubleshooting, as the term implies, refers to finding and repairing malfunctions. What is not implied and must be developed is a logical, systematic approach to finding and repairing these malfunctions. Each individual eventually develops a particular style as he gains experience in finding problems. The difference between a troubleshooter and a parts changer is how quickly and efficiently the problem is pinpointed and remedied. Including the following basic steps in your troubleshooting procedure, enables you to develop a good system for handling problems:

1. Acquire a complete understanding of how the system works when it is operating normally.
2. Develop an understanding of the service literature (manuals, bulletins, etc.) and know how to use a volt-ohmmeter to gather information from the malfunctioning equipment.
3. Learn to correctly interpret and analyze the information gathered from the malfunctioning equipment.
4. Isolate problems in a logical and systematic manner.
5. Replace only the damaged component by using the proper tools and doing so in an efficient manner.
6. Finally, check the system out to be sure your repair has been complete and effective.

The troubleshooting guide which follows has been divided into three categories. Category 1 refers to the sequence of events as described in the Model 550A Theory of Operation. Category 2 refers to error codes as dis-

played on the diagnostic display when the error light is lit. Category 3 refers to malfunctions by symptoms. We recommend that you commence troubleshooting with Category 1, Sequence of Events.

Turn the power on and watch the machine step through the different states of operation. When a deviation from normal state occurs, refer to the fault number for further definition. The 550A Diagnostic Display is located on the lower left hand corner of th front panel. The left digit of the display represents the state that the machine is in. The right digit of the display reflects the status for mixing (i.e., product system status and water system status).

TOLL FREE SERVICE NUMBER 1-800-826-3529

CATEGORY 1 SEQUENCE OF EVENTS

STATE	SHOULD DO			FAULT
Power Up	POWER INDICATOR LIGHTS (located on ON/OFF switch)			
1	INITIALIZATION-DISPLAY 1X*			2, 3
	a. Reverse main gearbox until zero is reached (only if gearbox is not at zero)			Error 91
	b. Park cutter on left or right			Error 97, 98
2	WAITING TO DISPENSE-DISPLAY 2X			
	a. Ready light on			4
	b. Operator should set fry size			5
	portion size			6
	portion control			7
	Push ready button to move to STATE 3			
3	DISPENSING-DISPLAY 3X			
	Number of cuts			
	Fry Size	Large	Regular	
	0 (Keyed Slicer)			
	1 (3/32 inch)	24	36	
	2 (1/8 inch)	30	20	
	3 (3/16 inch)	18	12	Error 92, 98
	4 (1/4 inch)	15	10	5, 6, 7
	5 (5/16 inch)	12	8	
	a. Portion mode			7
	Dispense one portion each time ready button is pushed (Portion size is the number of cuts selected on portion size switch) or			
	b. Regular Auto Mode Dispense 22 oz. of product or			7
	c. Large Auto Mode Dispense 33 oz. of product			
4	SEEKING ZERO-DISPLAY 4X			Error 91
	Main gearbox seeks zero position			
5	WAITING TO MIX-DISPLAY 5X			12, 14, 15, 16
6	MIXING-DISPLAY 6X			
	a. Piston moves to mix starting position			Error 92
	b. Dump Product (8 flights regular mode) (12 flights large mode)			Error 43
	c. Pump 440ml water			Error 45
	d. Piston moves to pause position (Note: Piston movement is during pump post water)			
	e. Waits adjustable pause			9
	f. Piston moves to rehydrate pause position			Error 92
	g. Waits 8 seconds			
	h. Moves to ready position			Error 92

CATEGORY 1 SEQUENCE OF EVENTS - Continued

STATE	SHOULD DO	FAULT
	i. Large mode only, waits until water is hot or for 30 seconds, whichever is longer Back to STATE 2	

*NOTE: X means right side digit has no meaning.

CATEGORY 2 ERROR CODES

DIAGNOSTIC DISPLAY	MEANING	PROBABLE CAUSES
91	No main drive reverse	Input Signal Error a. Main drive motor activated switch b. Zero switch Output Signal Error a. DMR solid state relay Component Error a. Main drive motor b. Drive motor capacitor Main P.C.B.
92	No main drive forward	Input Signal Error a. Main drive motor activated switch Output Signal Error a. DMF solid state relay Component Error a. Main drive motor b. Drive motor capacitor Main P.C.B.
93	Bad product system	Input Signal Error a. Product motor activated switch Output Signal Error a. Product solid state relay Mechanical a. Stuck metering vane Component Error a. Product motor Main P.C.B.
94	No fill water	Water turned off Input Signal Error a. High probe (tank would overfill) Output Signal Error a. Fill solid state relay Component Error a. Fill solonoid Main P.C.B.
95	Not pumping	Input Signal Error a. Low probe Output Signal Error a. Pump relay Component Error a. Pump motor Main P.C.B.

CATEGORY 2 ERROR CODES - Continued

DIAGNOSTIC DISPLAY	MEANING	PROBABLE CAUSES
96	No water heater	Input Signal Error a. Thermostat (water would be boiling or water high limit would be tripped) Output Signal Error a. Water heater relay Component Error a. Water heater Main P.C.B.
97	No front cover	a. No front cover b. No front magnet c. Front cover interlock switch d. Main P.C.B.
98	Not cutting	Input Signal Error a. Cutter motor actuated switch Output Signal Error a. CUT solid state relay Mechanical a. Cutter jammed Component Error a. Cutter motor Main P.C.B.
99	Not seeking zero	Input Signal Error a. Zero sensor switch b. Poor solder connections c. Poor contact in connector

CATEGORY 3 MALFUNCTIONS

SYMPTOMS	DIAGNOSTIC DISPLAY	PROBABLE CAUSES
1. No power		a. Machine not plugged in. b. Top or bottom interlock switch not energized. c. Water system electric plug (P-10) not plugged in. d. Circuit breaker tripped (in-house wiring). e. Faulty main power switch.
2. No display a. Nothing happens when turned on		a. Faulty AC/DC power supply. b. Main P.C.B.
b. Machine reaches STATE 2 (Waiting to dispense)		a. Faulty board inter-connect cable. b. Faulty main P.C.B. c. Faulty display P.C.B.
3. Improper display or flashing display and front panel lights	XX	a. Display P.C.B. b. Main P.C.B. c. Interconnect cable.
4. No ready light	9X	See error code.
	2X, 3X	a. Light bulb b. Display P.C.B.
5. Incorrect fry size	XX	a. Improper setup (setting will change only in STATE 2). b. Display P.C.B.
6. Incorrect portion size	XX	a. Improper setup (setting will change only in STATE 2). b. Display P.C.B.

CATEGORY 3 MALFUNCTIONS - Continued

SYMPTOMS	DIAGNOSTIC DISPLAY	PROBABLE CAUSES
7. Incorrect portion control	XX	a. Improper setup (large or regular dispense will change only in STATE 2). b. Portion control switch. c. Display P.C.B.
8. No dispense when ready button pushed	2X, 3X	a. Ready button b. Display P.C.B.
9. No adjustable pause or incorrect adjustable pause	6X	a. Main P.C.B.
10. No buzzer	XX	a. Buzzer not plugged in. b. Bad remote buzzer. c. Buzzer plug. d. Main P.C.B.
11. No conveyor	XX	a. Conveyor not plugged in. b. Bad remote conveyor. c. Conveyor plug. d. Main P.C.B.
12. No refill light	X3	a. Light bulb burned out. b. Display P.C.B.
	X1, X2, X0	a. Low product sensor or adjustment. b. Sensor plate. c. Main P.C.B.
13. No error light	9X	a. Light bulb burned out. b. Display P.C.B.
14. Always a refill light	XX	a. Low product sensor or adjustment. b. Sensor plate. c. Product system connector. d. Main P.C.B. e. Display P.C.B.
15. Water not hot	X2	Wait, if a problem exists, the water heater timer will time out and error 96 will appear.
16. Water system not full	X1	Wait, if a problem exists, the water fill timer will time out and error 94 will appear.

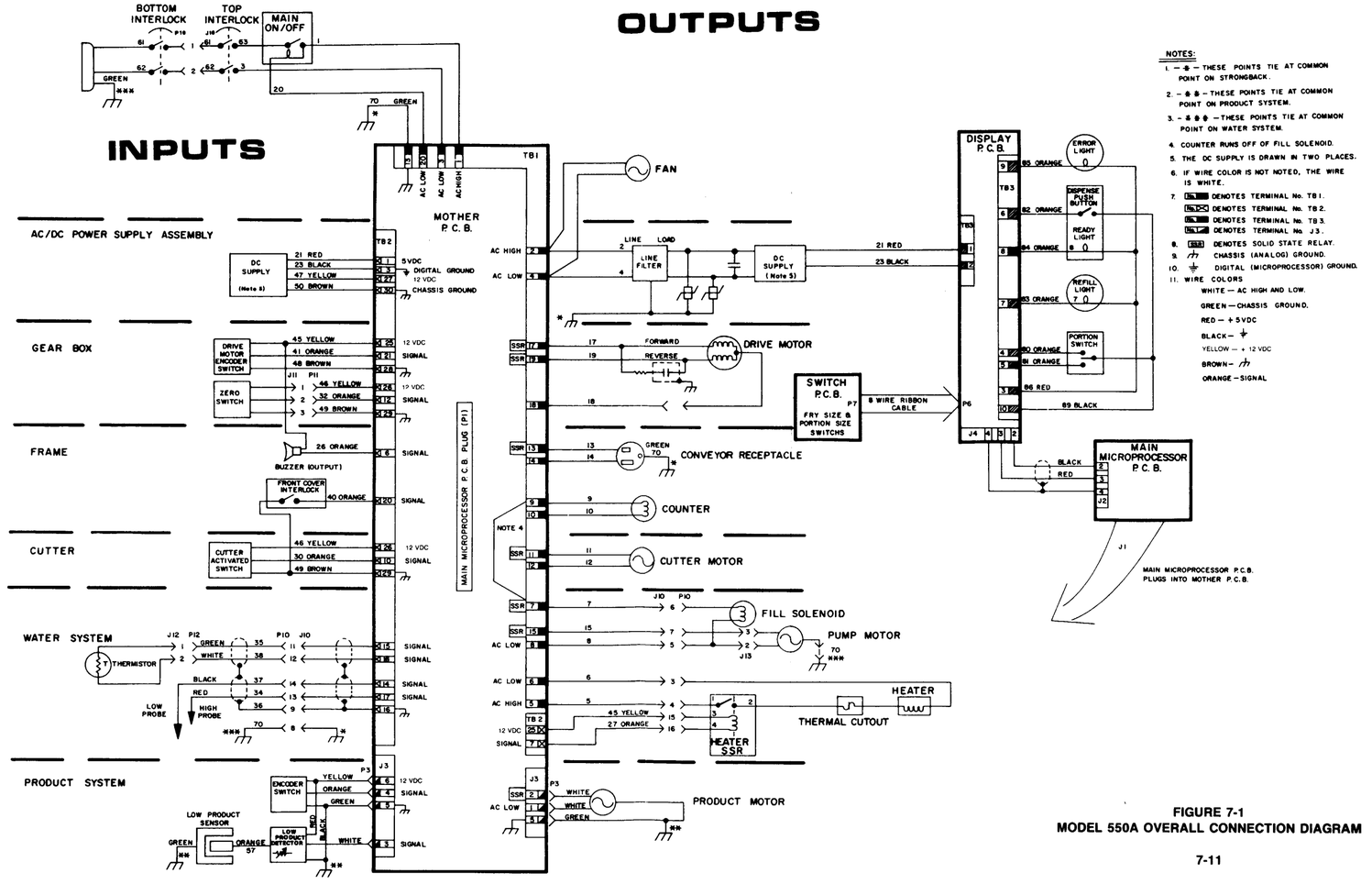


FIGURE 7-1
MODEL 550A OVERALL CONNECTION DIAGRAM

7-11

Figure 7-1 MODEL 550A OVERALL CONNECTION DIAGRAM

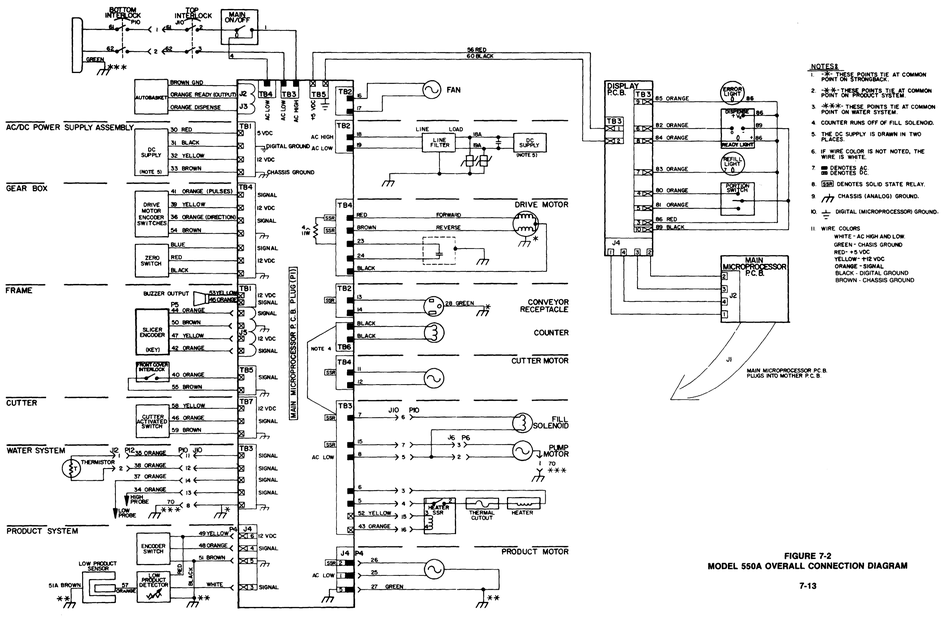


FIGURE 7-2
MODEL 550A OVERALL CONNECTION DIAGRAM

7-13

Figure 7-2 MODEL 550A OVERALL CONNECTION DIAGRAM

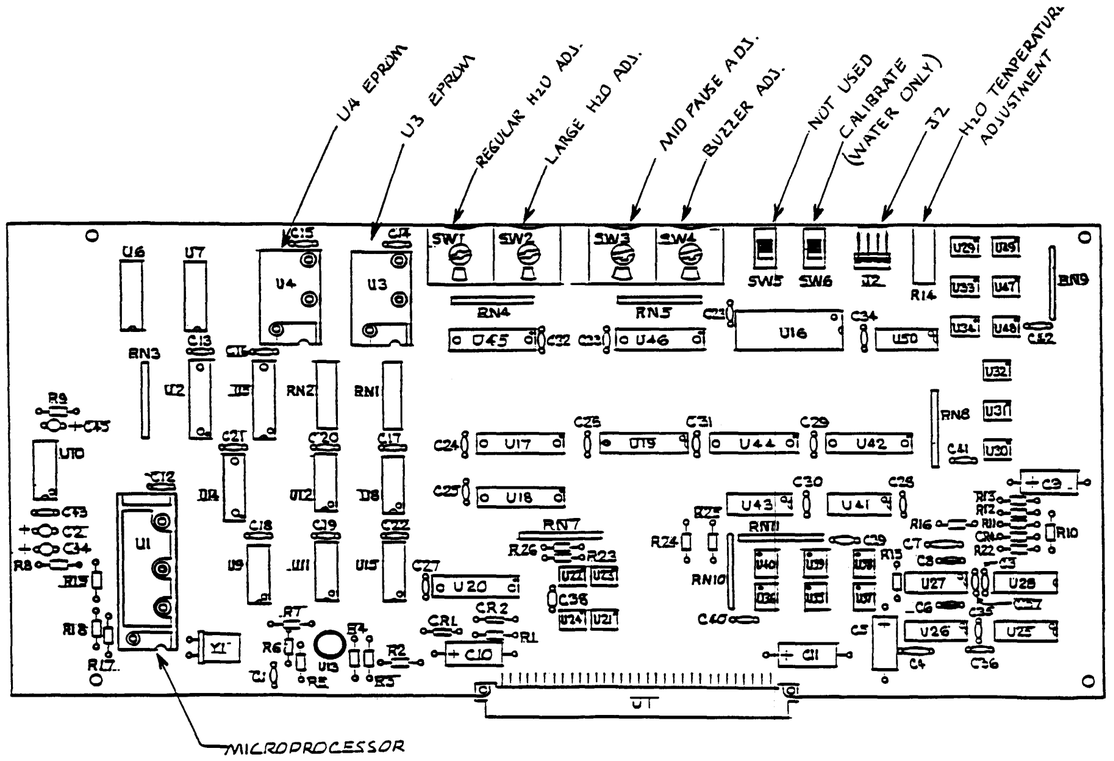


FIGURE 7-3
MAIN MICROPROCESSOR BOARD

Figure 7-3 MAIN MICROPROCESSOR BOARD

CHAPTER 8

MODEL 550GT

In RF550GTS and GTNSU machines, serial #8000 and above, certain improvements have been made. See figures below for details.

FIGURE REFERENCE

This manual section is provided to outline modifications made in the Model 550GT RUSSET FRIES DISPENSER to accomodate use for various government installations.

The Model 550GT is basically the same machine as the Model 550A. However, due to our on-going Research and Development program, some rather significant changes have been made to certain subsystems which have necessitated alterations in both the hardware and the software requirements. We are providing this chapter to outline the scope of these changes in the Model 550GT. Otherwise, this manual applies to the Model 550GT and can be used for operation and maintenance purposes.

The Model 550GT is available with a choice of water systems. The GT-NSU model is a 440 Vac, 60 Hz, single phase version with double-gang interlock switches. It is hard-wired upon installation, and is recommended for shipboard use. The GT-S model is a 208 Vac, 60 Hz, 3-phase version which has the same switches as used for interlocks on the Model 550A. This system is provided with a 5-wire plug and cord assembly, and is recommended for shore galley use. These models are provided with 3000 watt heaters which brings the water to temperature more quickly and recycles much faster than the standard 110 volt heater. The standard Model 550A 115 Vac, 60 Hz version is also available for certain applications. The relay utilized in the water systems is a wetted mercury contact relay which provides added system reliability.

Another major revision made in the GT models is the addition of slicers which are keyed to the machine electronics. A key block with magnets has been added to the slicer assemblies. Slicers have a small machined ″nub″ on the bottom so they cannot be placed on the machine incorrectly. When a slicer is inserted on the machine, an internal sensor picks up the type of slicer being used and sends a message to the microprocessor. In turn, the machine automatically extrudes the proper amount of product. Therefore, the fry size switch and the portion size switch found on the Model 550A have been eliminated on the Model 550GT.

The portion control switch on the Model 550GT has three positions:

Single - dispenses a single order when ″ready’ button is pushed.

Regular - dispenses 22 ounces of product or equivalent of 15.2 ounces of cooked fries.

Large - dispenses 33 ounces of product or equivalent of 22.5 ounces of cooked fries.

An alphanumeric display has now been positioned on the center front face of the machine. This display effectively ″talks″ to the operator, providing six easy to read and understand messages. Additionally, an expanded diagnostic program provides explicit serviceman messages on this same display. When a malfunction occurs, the ″error″ light will illuminate, and the messages on the alphanumeric display will automatically revert from operator-type messages to serviceman-type messages, pinpointing probable area of problem. When the malfunction has been corrected, turn the power switch to off, then back to on, and operator-type messages should be restored to the display.

Mechanical construction of GT models has been simplified by significantly reducing the number of internal parts. Plug-in, solid state boards and relays have also greatly simplified maintenance of electronic control system.

These revisions are outlined in detail in this section of the manual. Revised drawings and parts lists are provided to show current hardware and software configurations for the Model 550GT RUSSET FRIES DISPENSER.

SPECIFICATIONS

STANDARD ACCESSORIES : A transfer tray and 1/4″ straight cut slicer are included with each machine.

STANDARD MACHINE CALIBRATIONS

STANDARD MACHINE	Water Volume:	
CALIBRATIONS (per cycle):	Regular Mode-	440 ML.
	Large Mode-	660 ML.
	Water Temperature-	145°F (63°C)

MIX STORAGE CAPACITY

RUSSET FRIES FRENCH FRY POTATO PRODUCT MIX STORAGE CAPACITY:	13.5 lbs. of mix (enough for approximately 33 machine cycles) or 27 lbs. of mix) enough for approximately 66 machine cycles) with hopper extension. (Makes 1000 fried oz.)
CYCLE TIME:	Regular Mode: 30 seconds with 55°F (13°C) inlet water Large Mode: 60 seconds with 55°F (13°) inlet water

BATCH TIME

BATCH TIME:	Regular: 22 oz. uncooked 15.2 oz. fried	Large: 33 oz. uncooked 22.5 oz. fried

SLICER TYPE

SLICER TYPE	FRY SIZE (Inches)	SLICER TYPE	FRY SIZE (Inches)
Hashbrown	1/8	5/16 Straight	5/16
Cottage Fry	3/16	5/16 Crinkle	5/16
Shoestring	3/16	Steak	5/16
1/4″ Straight (Std.)	1/4	Dices	1/4
1/4″ Crinkle	1/4	Onion Rings*	3/16
		Tortilla	

*made with onion flavor potato product

MAXIMUM PORTIONS

MAXIMUM PORTIONS PER BATCH (Number of cuts per batch):

NUMBER OF CUTS PER BATCH		
Fry Size	Regular Mode	Large Mode
1/8	20	30
3/16	12	18
1/4	10	15
5/16	8	12

ENVIRONMENTAL TEMPERATURE

ENVIRONMENTAL TEMPERATURE:	Will operate in temperatures above 32°F (0°C) and below 130°F (54°C) and in 99% + relative humidity (designed specifically for use in military kitchens).
VIBRATION:	Will tolerate reasonable vibrations (0.05 g. max.)
TILT ANGLE:	Will operate while tilted as much as 3 degrees in any direction.
INLET WATER PRESSURE:	5 psi to 100 psi
POWER REQUIRED:	115/440 VAC, 60 Hz single phase or 208 VAC, 60 Hz 3 phase
DIMENSIONS:	27 7/16″ high (32″ high when optional hopper extension is added) x 12 3/4″ wide x 25 3/8″ deep
WEIGHT:	119 pounds (54.0 kg) net 139 pounds (63.1 kg) shipping weight
PERMISSABLE MACHINE STORAGE	-30°F (-34°C) to +150°F (66°C)-Water system must be drained

CHAPTER 9

MODEL 550GT THEORY OF OPERATION

A major portion of the theory of operation outlined in Section 5 for the Model 550A applies to the Model 550 GT with some exceptions.

The diagnostic display was located under the front cover on the Model 550A. It has been moved to the center on the face of the machine, and it is now an alphanumeric display rather than a digital display. Instructions are spelled out as operator-type messages and serviceman-type messages.

Operator-type messages are:

Ready

Dispensing

Mixing

Refill Hopper

Install Front Cover

Initialize

Empty Hopper

When a malfunction occurs, the ″error″ light will illuminate and operator-type messages will revert to serviceman-type messages. The expanded diagnostic program simplifies troubleshooting by providing the following serviceman messages:

Check Fill Water

Not Pumping

Check Drive Rev

Check Drive Fwd

Not Cutting

Not Heating

Check High Voltage

Bad Product System

When the malfunction has been corrected, turning the power off and on will restore machine to normal operation.

The overall connection diagram is provided as Figure 11-1 (serial no’s. 7000-7999) 11-2 (serial no’s 8000-up)

A complete list of parts numbers has been assigned to the Model 550GT, and this is provided in Figure 10-1A.

Complete system drawings showing parts locations are provided in Figure 10-1B through Figure 10-6.

1. Hardware Description.

a. Gear Box The gear box has an adjustable extrude length. The length is measured and controlled by counting the number of motor revolutions with the encoder on the rear of the drive motor. This encoder has a resolution of 1/8 of a motor turn which is equivalent to 0.01 inch of extrude length. The extrude length controls the fry size (i.e., 3/32, 1/8, 3/16, 1/4, 5/16). The home position of the gear box is the zero position (piston to the rear). The zero position is sensed with the zero sensor. There is a magnet implanted in the plunger shaft. When the magnet moves under the zero sensor, zero has been reached.

b. Cutter The cutter is driven by a gear motor. The cutter position is sensed by the cutter activated switch (CAS). After the piston has advanced to the desired extrude length, the cutter cuts the fry.

c. Control Circuitry The control circuitry consists of three printed circuit board assemblies.

1) The main microprocessor performs the main control function. It monitors the following inputs:
   a) Water temperature
   b) Low probe
   c) High probe
   d) Cutter activated switch
   e) Product activated switch
   f) Low product sensor
   g) Front interlock
   h) Zero sensor
   i) Main drive motor activated switch
   j) Serial output from display board
   k) Slicer activated switch It generates the following outputs:
   a) Pump solid state relay control
   b) Product solid state relay control
   c) Fill solenoid solid state relay control
   d) Cutter motor solid state relay control
   e) Conveyor motor solid state relay control
   f) Main drive motor forward solid state relay control
   g) Main drive motor reverse solid state relay control
   h) Water heater solid state relay control
   i) Buzzer control, D.C. output
   j Serial output to display board.
2) The mother board provides the main interconnect between the wiring harness and the main printed circuit board. The mounting position for the solid state relays is also the mother board. These relays are plugged in and out of the mother board. Also contained on the mother board is a 2000MF capacitor. This capacitor provides power recovery during a mix cycle for power outages under one minute.
3) The display printed circuit board receives serial information from the main circuit board. This information is displayed on the numeric display and on the front panel lights. The display printed circuit board transmits serial information to the main printed circuit board. This information consists of portion control and dispense.

d. Front Panel Indicators

1) Refill light performs the same function as on the other 550 models. Refill product hopper only when refill light is lit.

2) Error Light. This light indicates that the machine is no longer functioning. The microprocessor has detected an error condition and shut the machine down. To determine the error condition, observe the error code number on the numeric display. The restart the model 550GT, turn the main power switch off, then back on.

3) Ready Light. Ready light illuminates when ready to dispense.

4) Alpha Display. 16 character display that tells operator or maintenance man what the machine is doing or what is wrong. Normal messages:

Initialize

Ready

Dispensing

Mixing

Refill Hopper

Install front cover

Empty Hopper? Error Messages:

Check drive rev (reverse)

Check drive fwd (forward)

Bad prod (product) system

No fill water

Not pumping (Bad water system)

Not heating/check high voltage (bad water system)

Not cutting (bad cutter assembly)

If an error condition is detected by the microprocessor, the error light is lit.

The error messages indicate what the microprocessor considers to be wrong. As an example, Error Code Bad Product System, can either mean that the product drive motor did not run when commanded (turned on) or the product drive motor sensor did not inform the microprocessor that the drive motor was running. Each one of the error codes has the same type of two probable errors - an action did not take place or the microprocessor did not detect the action. Error code, No Fill Water, is displayed if the water tank has not filled within a fixed amount of time. If this condition is displayed, check to find out if the water to the machine is disconnected or turned off.

e. Front Panel Switches

1) The ready button dispenses product when pushed.

2) Portion control switch is a three position toggle switch.
   a) Position 1 Large Dispense-dispenses in auto mode thirty three ounces of product.
   b) Position 2 Places machine in single portion dispense mode.
   c) Position 3 Regular dispense twenty-two ounces auto dispense mode.

2. Calibration.

a. Water Volume Calibration The 550GT water volume is calibrated basically the same as the 550 water volume. Calibration is accomplished by timing below the low probe. This timing is set by the adjustable switch on the microprocessor board. On the Model 550GT, there are two switches which control the water volume, SW1 and SW2. SW1 is used to adjust the regular dispense mode water volume. SW2 is the large dispense volume adjustment. Switch SW1 should be set on setting 8 in the shop, and the high probe adjusted for 440 mls. of water on regular dispense. Switch SW2 should then be adjusted for a large dispense volume of 660 mls. In the field, the adjustment may be made just using SW1 and SW2.

b. Pause Adjust Switch SW3 is used to adjust the distribution of the water from the top to the bottom of the dough slug, allowing for the adjustment of a wet or dry pocket out of the dough slug. SW3 should be set on position 4.

If the dough slug has a wet (or dry) bottom (or top), adjust this setting.

The greater the SW3 setting, the longer the pause and the dryer the top of the dough slug.

c. Fry Timer Adjust Switch SW4 is the fry timer adjust. The fry timer-buzzer plugs into the socket at the rear of the machine just above the conveyor receptacle. The fry timer adjust on the printed circuit board sets the time from when the dispense button is pushed until the buzzer buzzes. This is adjustable from 60 seconds at zero setting to 130 seconds at setting 7. The buzzer is provided as an optional external accessory to the Model 550GT.

d. Water Temperature Calibration Trim pot R14, mounted on the upper righthand side of the main microprocessor board, adjusts the water temperature. Turning this trim pot counterclockwise adjusts the water temperature higher. Turning this trim pot clockwise adjusts the water temperature lower.

3. Sequence of Events

The Model 550GT has six major states in its sequence of events. (See Figure 9-2)

a. State 1 - Initialization (power up) During initialization the microprocessor seeks zero with the main gear box and parks the cutter to the right or left side. It then moves to state 2. The front cover must be installed for the microprocessor to park the cutter.

b. State 2 - Waiting to Dispense This is the time period from when the ready light illuminates until the first dispense.

During this time the slicer may be changed to any desired fry size. This is the only time the fry size may be updated and have any effect upon the dispense. When the dispense button is pushed, the state changes to state 3.

c. State 3 - Dispensing This is the state in which the microprocessor is dispensing the product. No operator interaction is needed if in the auto mode. However, if you are in the portion mode, the microprocessor cuts one serving and then stops, waiting for the ready button to be pushed. When all the servings have been dispensed, the microprocessor moves to state 4.

d. State 4 - Seeking Zero This is the state the microprocessor is in while seeking zero. The microprocessor has the main drive motor in the reverse mode and is looking for the zero switch. When the zero switch is reached, the microprocessor is in state 5.

e. State 5 - Waiting to Mix The microprocessor is waiting on one or more of the following items before mixing: water filling; water heating; product hopper refill.

f. State 6 - Mixing The microprocessor is mixing when it is dumping product or water, or when it is waiting for the dough to set up.

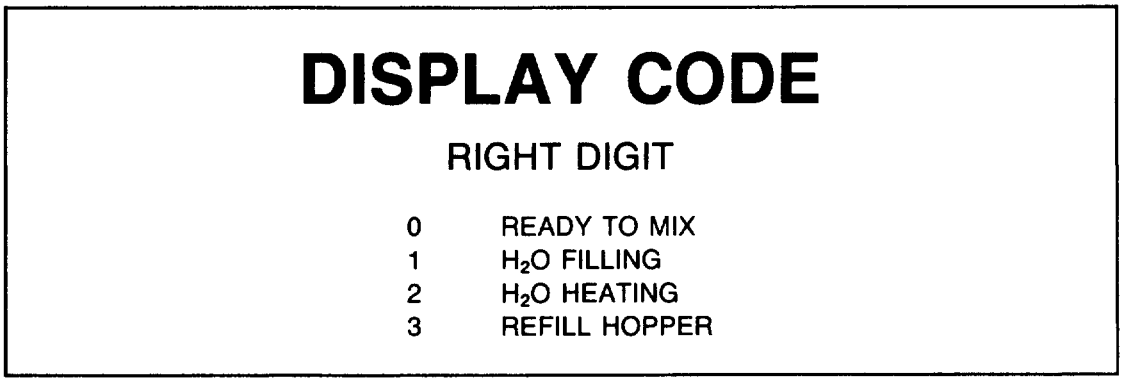


FIGURE 9-1
550GT DISPLAY CODES (NORMAL OPERATION)

Figure 9-1 550GT DISPLAY CODES (NORMAL OPERATION)

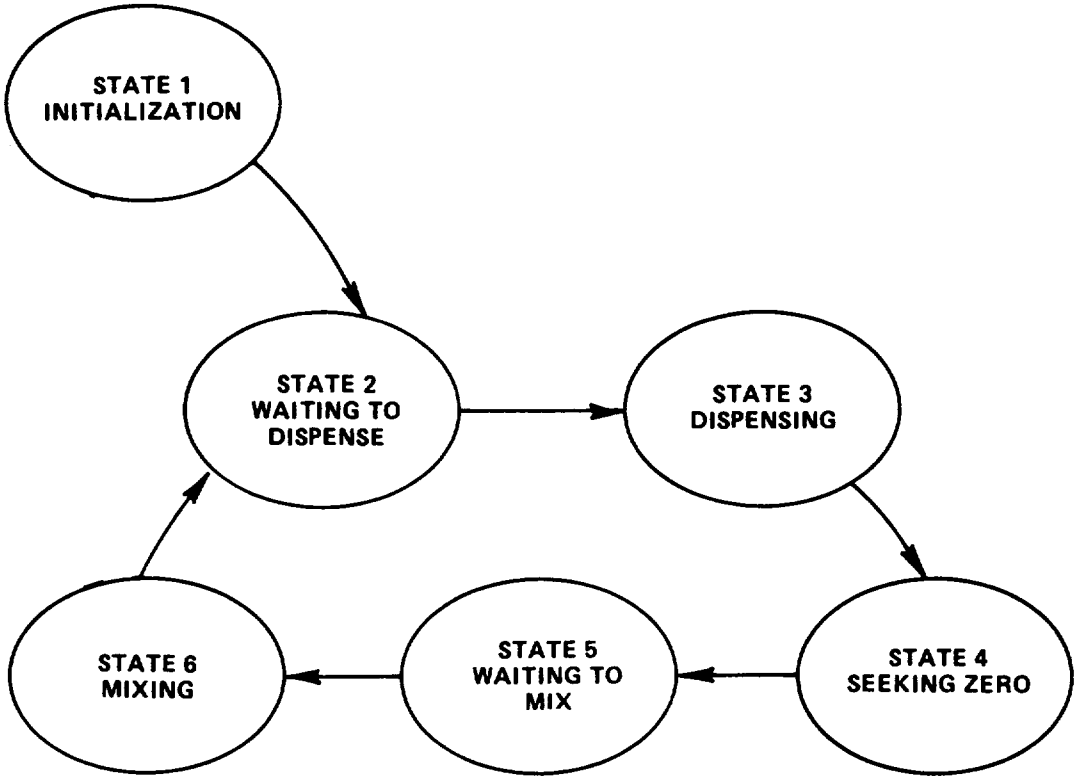


FIGURE 9-2
MAIN MICROPROCESSOR STATES

Figure 9-2 MAIN MICROPROCESSOR STATES

CHAPTER 10

MODEL 550GT ILLUSTRATED PARTS LIST

ITEM	PART NO.	DESCRIPTION	QTY	SHEET
1	STD-1349	CONVEYOR RECEPTACLE	1	5
2	11112	NAMEPLATE	1	2
3	20095	FRONT COVER ASSY	1	2
4	10362	FRONT WARNING LABEL	1	2
5	STD-1249	SEALANT	AR	2,3,4
6	10976	TOP COVER	1	2
7	20306	TOP BAND ASSY	1	2
8	11502	UPPER REAR PANEL	1	2
9	10321	RIGHT SIDE PANEL	1	2
10	STD-1000-08S-6N	SCREW	12	2,3,4,5
11	11040	LOWER REAR PANEL	1	2
12	STD-1361	KNURLED SCREW	4	2
13	20511	BASE & PEDESTAL ASSY	1	2
14	10216	REAR LABEL	1	2
15	10322	LEFT SIDE PANEL	1	2
16	10970	RECEPTACLE LABEL	1	2
17	STD-1240-4	CAP PLUG	1	2
18	STD-1030	RETAINING RING	1	3
19	20103	REED SWITCH ASSY	1	3
20	STD-1383	GROMMET	1	3
21	20066	CUTTER SHAFT ASSY	1	3
22	20642	CUTTER SUPPORT ASSY	1	3
23	20553	CUTTER ASSY	1	3
24	20760	STRONG BACK	1	3
25	11304	DEFLECTOR PLATE	1	3
26	11301	SLICER	1	3
27	11303	DIAPHRAGM	1	3
28	11302	PISTON	1	3
29	STD-1387-10-3	KNURLED SCREW	2	3
30	20277	NOZZLE ASSY	1	3
31	11300	CYLINDER	1	3
32	11252	NOZZLE HOLD DOWN	2	3
33	STD-1020-14-AZ	NUT	3	5
34	STD-1012-14Z-A	LOCKWASHER	12	3,4,5
35	20644	MAIN DRIVE & MOTOR ASSY	1	3
36	STD-1440	LOCTITE	AR	2,3,4,5
37	11017	CHARGING STUD	1	3
38	STD-1002-14Z-6	SCREW	1	3
39	STD-1014-14	THUMB NUT	2	3
40	20717	WATER SYSTEM ASSY	1	3
41	STD-1002-14Z-8	BOLT	4	3
42	20696	FRAME ASSY	1	3
43	20666	POWER SUPPLY ASSY	1	3
44	STD-1001-08Z-12M	SCREW	5	3,4,5
45	STD-1548-10-ZA	COUNTERSUNK LOCKWASHER	4	3
46	20646	PRODUCT SYSTEM ASSY	1	3
47	STD-1733	ROCKER SWITCH	1	4
48	11525	LOGO	1	2
49	STD-1728	REFILL LIGHT	1	4
50	STD-1674	READY LIGHT	1	4
51	STD-1729	ERROR LIGHT	1	4
52	STD-1622	SWITCH	1	4
53	STD-1015-4C-14	EXPANSION PIN	2	4
54	STD-1113-2T	CABLE TIE	18	4
55	STD-1020-08-AZ	NUT	20	3,4,5
56	STD-1011A-08	LOCKWASHER	16	3,4,5
57	STD-1021-06-C-G	NUT	2	4
58	20681	DISPLAY INTERCONNECT CABLE	1	4
59	11158	MAGNET PLATE	1	4
60	11499	SPACER	4	3
61	STD-1125	CONDENSER BRACKET	1	4
62	20119	CONDENSER SUPPORT	1	4
63	STD-1117	CONDENSER	1	4
64	STD-1222	GROUND CLIP	1	4
65	10702	INSULATION	1	4
66	STD-1000-06Z-20M	SCREW	2	4
67	10318	FRONT COVER STUD	2	5
68	20647	MAIN WIRE HARNESS	1	Not shown
69	11297	PLUNGER SHAFT GROMMET	1	3
70	11531	INLET WATER HOSE	1	Note 1
71	STD-1197-3	BREATHER PLUG	1	Note 1
72	STD-1320	SPACER	AR	3
73	20368	TRANSFER TRAY ASSY	1	Note 1
75	STD-1224	SWITCH	1	4
76	10701	SWITCH COVER	1	4
77	STD-1704-06Z-6M	SCREW	2	4
78	11324	HOPPER SCREEN	1	5
79	STD-1704-06E-6M	SCREW	2	4
80	STD-1743-06E-16	THREADED SPACER	2	4
81	11129	REFILL LABEL	1	2
82	11128	KEEP ME CLEAN LABEL	1	2
83	STD-1001-03S-4N	SCREW	2	2
84	STD-1002-14Z-12	BOLT	4	4
85	STD-1010A-10RZ	WASHER	4	4
86	STD-1001-08Z-4M	SCREW	2	5
87				
88	STD-1000-06Z-6M	SCREW	4	5
89	STD-1020-06-AZ	NUT	4	5
90	STD-1011A-06	LOCKWASHER	4	5
91	11344	BRACKET	1	5
92	20723	GT DISPLAY BOARD ASSY	1	5
93	11503	LABEL	1	4
94	STD-1002-14Z-10	BOLT	3	2
95	STD-1010A-10RZ	WASHER	3	2
96	STD-1744-08-4	PHENOLIC SPACER	4	5
97	20692	MAIN PC BOARD ASSY	1	5
98	STD-1000-08Z-16M	SCREW	2	5
99	STD-1002-15Z-16-5	SCREW	4	3
100	STD-1012-15Z-A	LOCKWASHER	4	3
101	STD-1748	INTELLIGENT DISPLAY ASSY	1	4
102	10353	COUNTER WINDOW	1	5
103	11813	BUZZER LABEL	1	2
104	STD-1744-08-6	PHENOLIC SPACER	3	5
105	STD-1704-08Z-10M	SCREW	5	5
106	STD-1744-08-6	PHENOLIC SPACER	9	5
107	STD-1590-2	SOLID STATE RELAY	2	4
108	STD-1002-14Z-14	BOLT	1	5
109	STD-1627	FAN	1	5
110	STD-1021-08-C-G	NUT	2	5
111	STD-5227-29	SPACER	2	5
112	STD-1590-1	SOLID STATE RELAY	5	4
113	STD-1591-1	HEAT TAPE	1	5
114	10839	SLICER STUD	2	5
115	STD-1016-5-8S	DOWEL PIN	2	Not shown
116	STD-1629-2	CABLE MOUNTS	6	4
117	STD-1000-08Z-5M	SCREW	5	4
118	11541	RELAY LABEL	2	4
119	STD-5206	ADHESIVE	AR	3
120	11542	RELAY LABEL	5	4
121	STD-1749	PLASTIC BEZEL	1	4
122	STD-1751	RIBBON CABLE	1	4
123	20722	ENCODER ASSEMBLY	1	4

OPTIONAL ACCESSORIES

PART NUMBER	DESCRIPTION
11309	1/4" CRINKLE CUT SLICER
20708	5/16" STRAIGHT CUT SLICER
20706	COTTAGE FRY SLICER
20710	STEAK FRY SLICER
20708	5/16" CRINKLE CUT SLICER
20709	STEAK FRY (5 WIRE) SLICER
20711	ONION RING SLICER
20707	SHOESTRING SLICER
11492	DICE SLICER
20705	HASH BROWN SLICER
20726	TORTILLA SLICER
20567	CONVEYOR INSTALLATION KIT - LONG
20568	CONVEYOR INSTALLATION KIT - SHORT
20449	CONVEYOR HOLD DOWN KIT

REFERENCE DOCUMENTS

PART NUMBER	DESCRIPTION
30117	550 GT CONNECTION SCHEMATIC DIAGRAM
30114	WATER SYSTEM CONNECTION SCHEMATIC

FIGURE 10-1A
STANDARD PART NUMBERS FOR
MODEL 550GT RUSSET FRIES DISPENSER

Figure 10-1A STANDARD PART NUMBERS FOR MODEL 550GT RUSSET FRIES DISPENSER

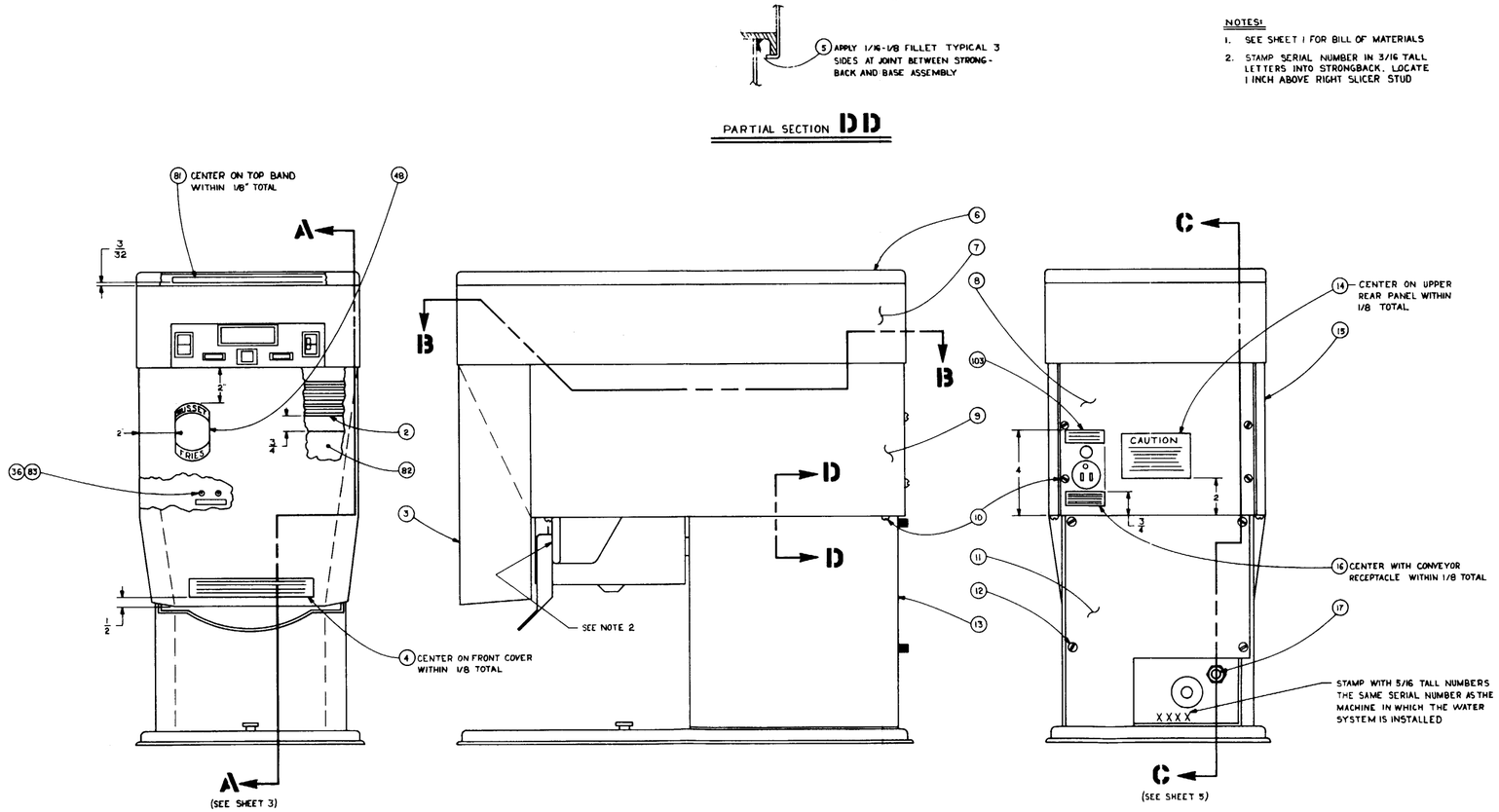
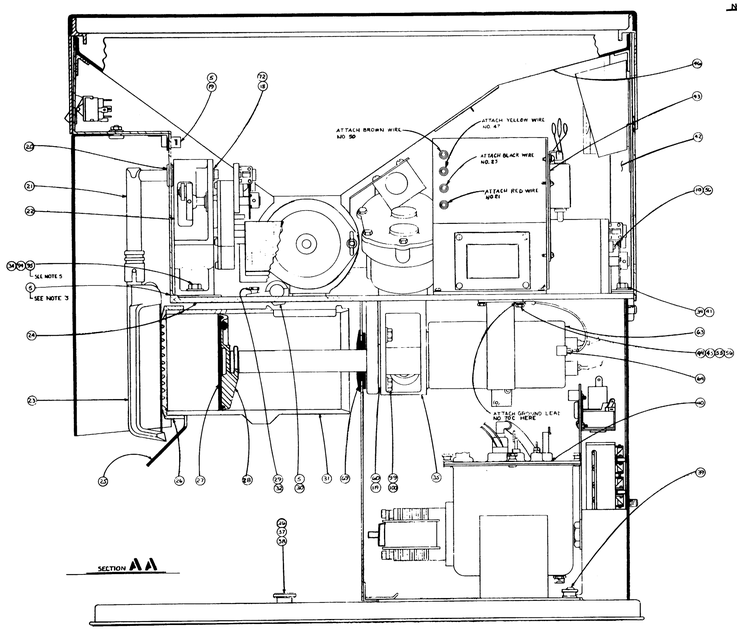


FIGURE 10-1B
MODEL 550GT RUSSET FRIES DISPENSER
COMPLETE SYSTEM

Figure 10-1B MODEL 550GT RUSSET FRIES DISPENSER COMPLETE SYSTEM



NOTES:

1. SEE SHT 1 FOR BILL OF MATERIAL
2. REED SWITCH ASSY ITEM 19 TO BE CENTERED SIDE TO SIDE ON REAR SURFACE OF FRONT PIECE WITHIN 1/8 INCH TOTAL. ENSURE SWITCH TERMINALS ARE ORIENTED AS ILLUSTRATED.
3. APPLY MINIMUM FILLET OF ITEM 5 FULL WIDTH OF JOINT BETWEEN STRINGBACK AND FRONT PIECE.
4. TORQUE GEAR BOX MOUNTING BOLTS 180 IN/LBS. MIN. & 216 IN/LBS. MAX.
5. USE FLAT WASHERS AS NEEDED.

FIGURE 10-1C
MODEL 550GT RUSSET FRIES DISPENSER
COMPLETE SYSTEM

10-5

Figure 10-1C MODEL 550GT RUSSET FRIES DISPENSER COMPLETE SYSTEM

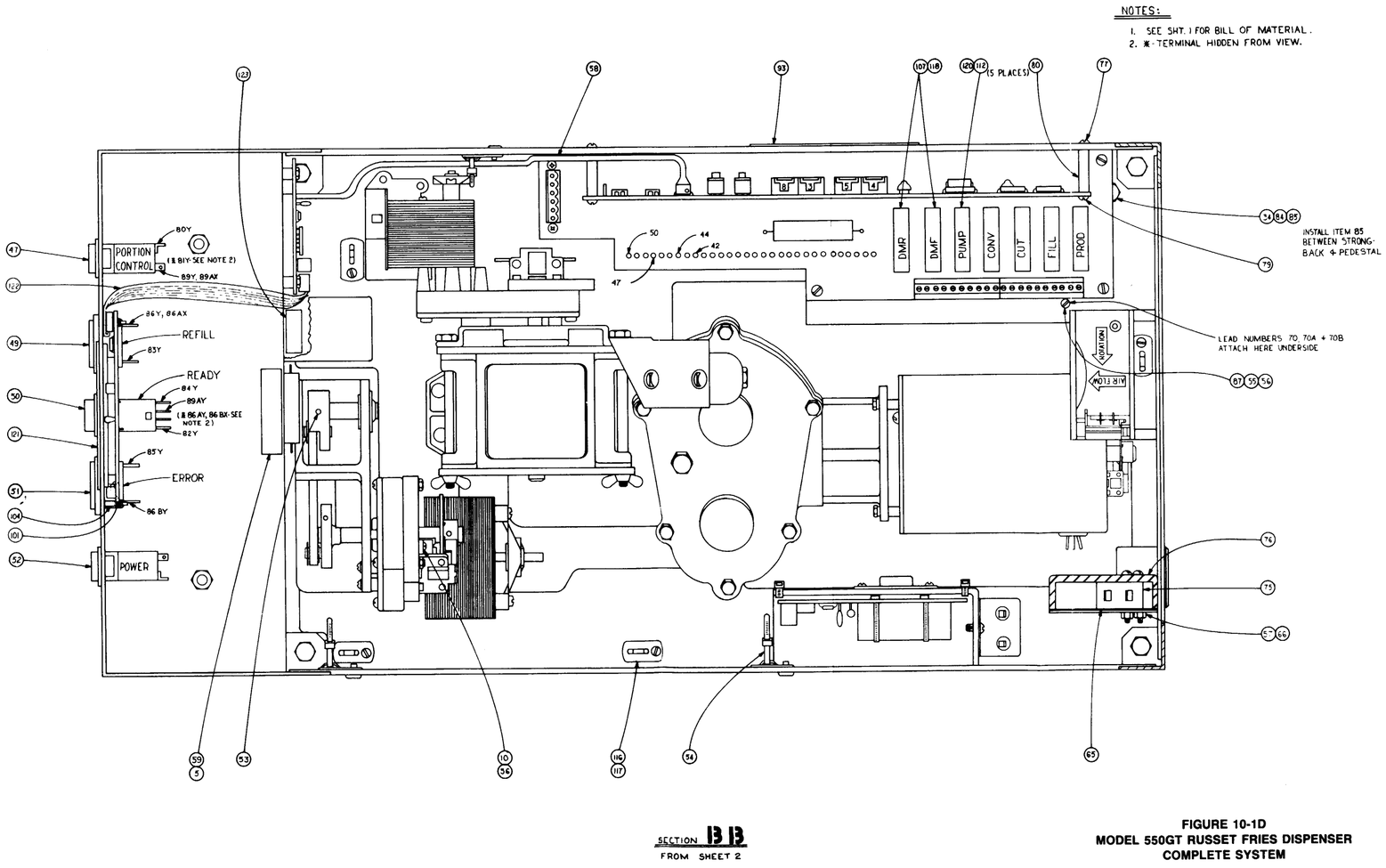


FIGURE 10-1D
MODEL 550GT RUSSET FRIES DISPENSER
COMPLETE SYSTEM

Figure 10-1D MODEL 550GT RUSSET FRIES DISPENSER COMPLETE SYSTEM

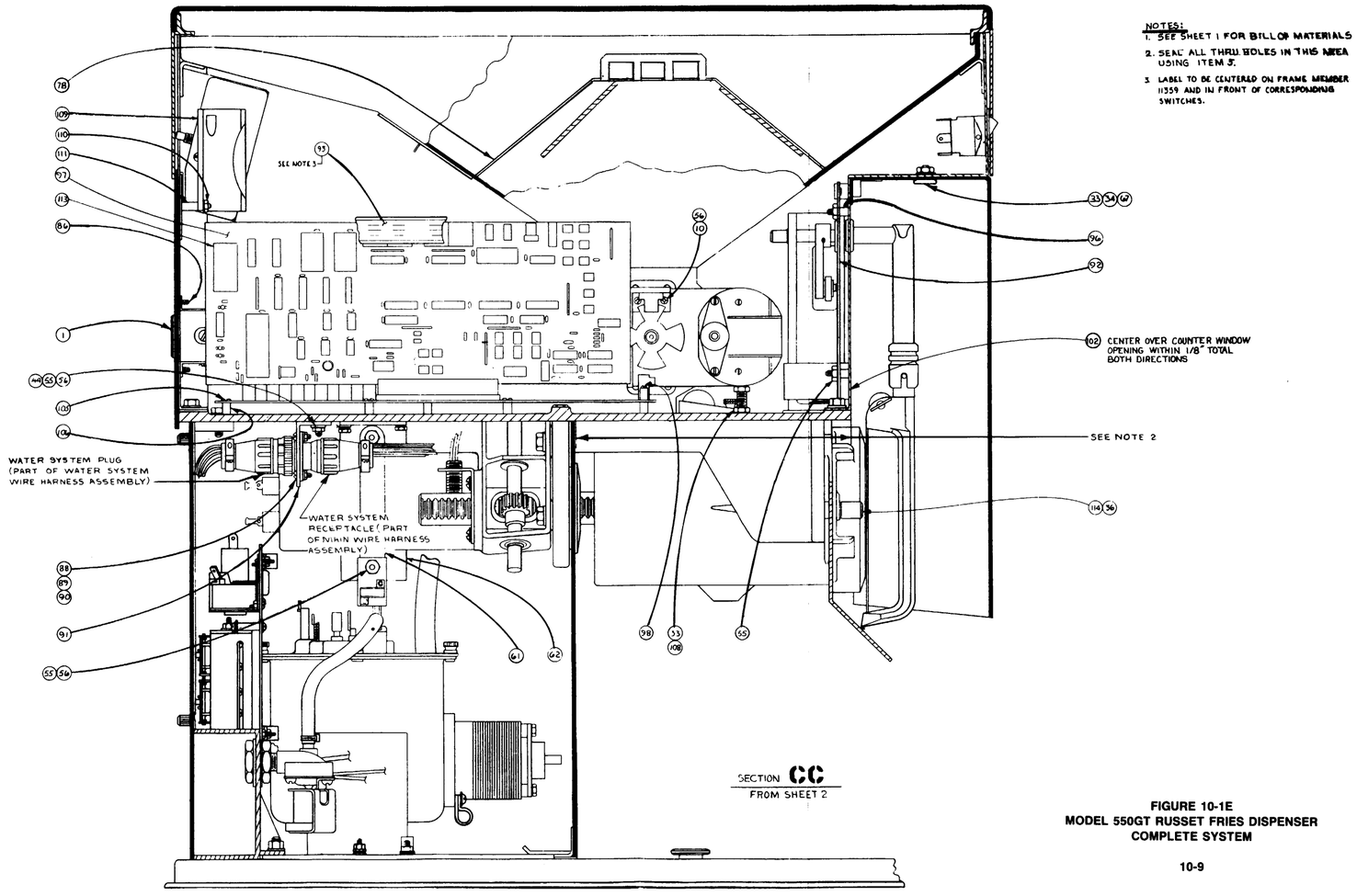


FIGURE 10-1E
MODEL 550GT RUSSET FRIES DISPENSER
COMPLETE SYSTEM

10-9

Figure 10-1E MODEL 550GT RUSSET FRIES DISPENSER COMPLETE SYSTEM

DRY PRODUCT SYSTEM ASSEMBLY

ITEM	QUANTITY	PART NO.	DESCRIPTION
1	1	20653	Sensor Disc
2	2	STD-1020-08A-Z	Nut
3	1	11464	Mounting Plate
4	2	STD-1020-14-A-Z	Nut
5	2	STD-1011-A-Z-14	Lockwasher
6	1	STD-1633-3	Switch Assembly Bracket
7	1	20661	Proximity Switch Assembly (Part of Wiring Harness)
8	1	11335	Switch Bracket
9	2	STD-1000-14Z-28M	Screw
10	2	1004-8Z-18M	Screw
11	6	STD-1011-A-08	Lockwasher
12	4	STD-1000-08Z-6M	Screw
13	2	STD-1274-14	Wing Nut
14	As Req'd.	STD-1490-1	Vibra-fite
15	2	11007	Meter Hopper End
16	1	20247	Meter Rotor Assembly
17	1	20524	Product Hopper Assembly
18	1	10844	Meter Motor Mount
19	2	STD-1002-145-56	Screw
20	1	11505	Motor
21	2	STD-1011-A-06	Lockwasher
22	2	STD-1000-06Z-06M	Screw

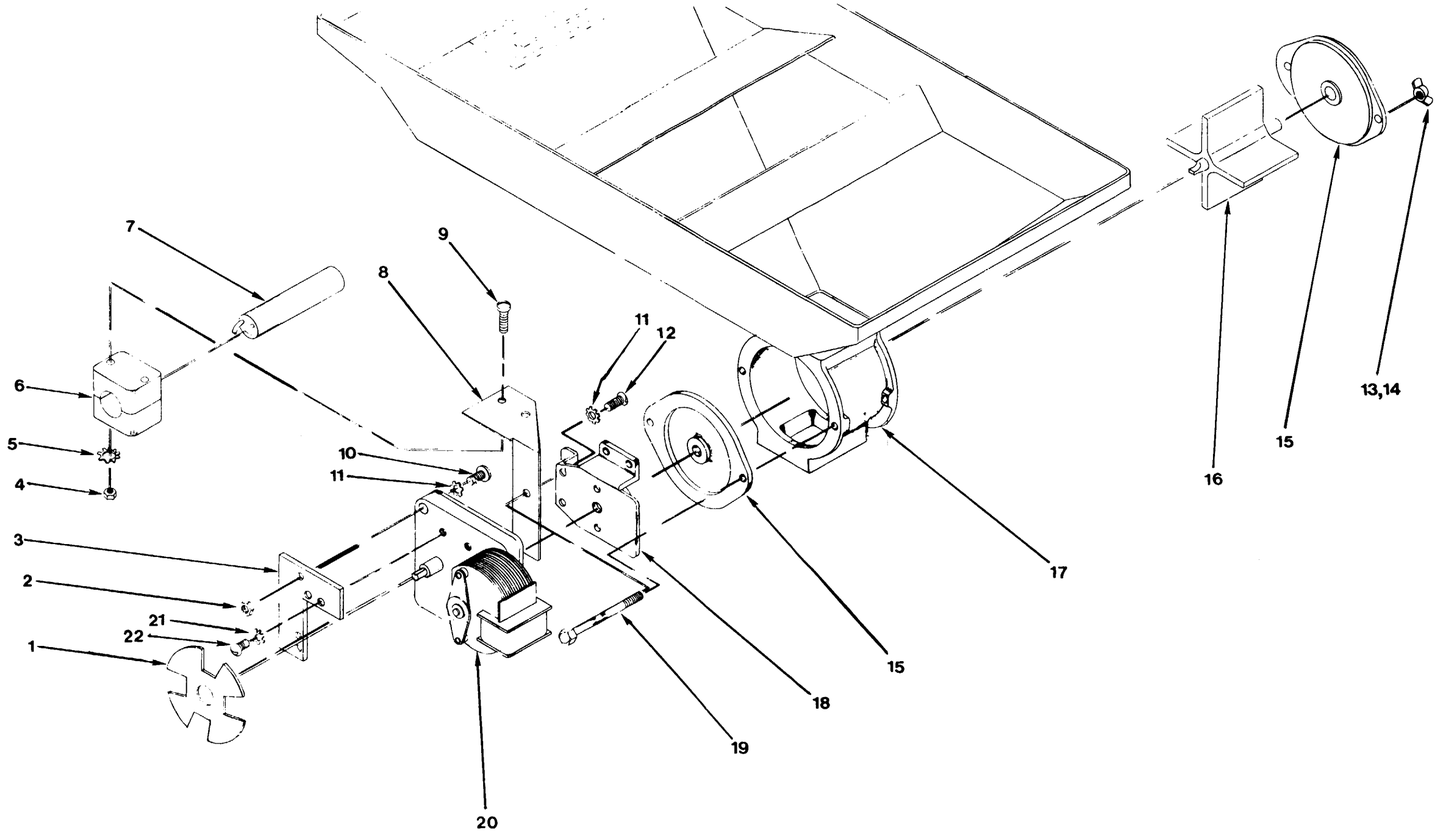


FIGURE 10-1F
MODEL 550GT — DRY PRODUCT SYSTEM

Figure 10-1F MODEL 550GT - DRY PRODUCT SYSTEM

ITEM	PART NUMBER	DESCRIPTION	QTY.	SHEET
1	STD 1349	CONVEYOR RECEPTACLE	1	3
2	11112	NAME PLATE	1	2
3	20095	FRONT COVER ASSEMBLY	1	2
4	10362	FRONT WARNING LABEL	1	2
5	STD 1249	SEALANT	AS REQ'D.	2, 3, 4, 5
6	10976	TOP COVER	1	2
7	20306	TOP BAND ASSEMBLY	1	2
8	11502	UPPER REAR PANEL	1	2
9	10321	RIGHT SIDE PANEL	1	2
10	STD 1000-08S-6M	SCREW	AS REQ'D.	2,4
11	11040	LOWER REAR PANEL	1	2
12	STD 1361	KNURLED SCREW	4	2
13	20511	BASE & PEDESTAL	1	2
14	10216	REAR LABEL	1	2
15	10322	LEFT SIDE PANEL	1	2
16	10970	RECEPTACLE LABEL	1	2
17	STD 1240-4	CAP PLUG	1	2
18	STD 1030	RETAINING RING	1	2
19	20103	REED SWITCH ASSEMBLY	1	3
20	STD 1383	GROMMET	1	3
21	20066	CUTTER SHAFT ASSEMBLY	1	3
22	20642	CUTTER SUPPORT ASSEMBLY	1	3
23	20553	CUTTER ASSEMBLY	1	3
24	20760	SST STRONGBACK	1	3
25	11304	DEFLECTOR PLATE	1	3
26	11301	SLICER	1	3
27	11303	DIAPHRAGM	1	3
28	11302	PISTON	1	3
29	STD 1387-10-3	KNURLED SCREW	2	3
30	20277	NOZZLE ASSEMBLY	1	3
31	11300	CYLINDER	1	3
32	11252	NOZZLE HOLD DOWN	2	3
33	STD 1020-14-AZ	NUT	3	5
34	STD 1012-14Z-A	LOCKWASHER	12	3,4,5
35	20744	MAIN DRIVE ASSEMBLY	1	3
36	STD 1020-15-A-S	NUT	4	3
37	STD 1012-15S-A	LOCKWASHER	4	3
38	STD 1440	LOCTITE	AS REQ'D.	2,3,4,5
39	11017	CHARGING STUD	1	3
40	STD 1002-14S-6	SCREW	1	3
41	STD 1014-14	FINGER NUT	2	3
42	20717	WATER SYSTEM ASSEMBLY	1	3
43	STD 1002-14S-6	SCREW	4	3
44	20696	FRAME ASSEMBLY	1	3
45	11488	POWER SUPPLY	1	3
46	20738	CORCOM ASSEMBLY	1	4
47	STD 1001-08Z-12M	SCREW	4	5
48	STD 1548-10-ZA	COUNTERSUNK LOCKWASHER	4	5
49	20646	PRODUCT SYSTEM ASSEMBLY	1	3
50	STD 1733	ROCKER SWITCH	1	4
51	11525	550A LOGO	1	2
52	STD 1728	REFILL LIGHT	1	4
53	11578	DISPENSE SWITCH	1	4
54	STD 1729	ERROR LIGHT	1	4
55	STD 1622	ON/OFF SWITCH	1	4
56	STD 1015-4C-14	EXPANSION PIN	1	4
57	STD 1113-2T	CABLE TIE	AS REQ'D.	4
58	STD 1020-08-AZ	NUT	14	4,5
59	STD 1011A-08	LOCKWASHER	AS REQ'D.	4,5
60	STD 1021-06-C-G	NUT	2	4
61	20681	DISPLAY INTERCONNECT CABLE	1	4
62	11158	MAGNET HOLDER	1	4
63	STD 1125-4	CONDENSOR BRACKET	1	5
64	20119	CONDENSOR SUPPORT	1	5
65	STD 1117-2	CONDENSOR	1	5
66	10702	INSULATION	1	4
67	STD 1000-06Z-20M	SCREW	2	4
68	10318	FRONT COVER STUD	2	5
69	20743	MAIN WIRE HARNESS	1	4
70	11297	PLUNGER SHAFT GROMMET	1	3
71	11531	INLET WATER HOSE	1	See Note 1
72	STD 1320	SPACER	AS REQ'D.	3
73	20368	TRANSFER TRAY ASSEMBLY	1	See Note 1
74	STD 1224	INTERLOCK SWITCH	1	4
75	10701	SWITCH COVER	1	4
76	STD 1704-06Z-6M	SCREW	2	4
77	11324	HOPPER SCREW	1	5
78	STD 1704-06P-6M	SCREW	2	4

ITEM	PART NUMBER	DESCRIPTION	QTY.	SHEET
79	STD 1743-06P-16	THREADED SPACER	2	4
80	11129	REFILL LABEL	1	2
81	11128	KEEP ME CLEAN LABEL	1	2
82	STD 1001-04S-4M	SCREW	2	2
83	STD 1002-14Z-12	SCREW	4	4
84	STD 1001-08Z-4M	SCREW	2	3
85	STD 1000-06Z-6M	SCREW	4	5
86	STD 1020-06-AZ	NUT	4	5
87	STD 1011A-06	LOCKWASHERS	4	5
88	11344	WATER CONNECTOR BRACKET	1	5
89	20723	GT DISPLAY BOARD ASSEMBLY	1	5
90	11503	550A PC BOARD LABEL	1	4,5
91	STD 1002-14S-8	SCREW	2	3
92	STD 1010A-14RZ	FLAT WASHER	2	3
93	STD 1744-08-4	PHENOLIC SPACER	4	5
94	20692	550A MAIN PC BOARD ASSEMBLY	1	5
95				
96	STD 1748	INTELLIGENT DISPLAY ASSEMBLY	1	4
97	11513	BUZZER LABEL	1	2
98				
99	STD 1704-08E-6M	SCREW	8	5
100	STD 1795-1	MALE-FEMALE THREADED SPACER	8	5
101	STD 1590-2	SOLID STATE RELAY 240V	2	4
102	STD 1000-14S-14M	SCREW	1	5
103	11577	PRODUCT SYSTEM ADJUSTER	1	5
104	STD 1627	FAN	1	4
105	STD 5227-33	SPACER	2	4
106	STD 1021-08-C-C	NUT	4	4
107	STD 5227-29	SPACER (FAN)	2	4
108	STD 1590-1	SOLID STATE RELAY 110V	5	4
109	STD 1591-1	TEMP. RECORDS	1	5
110	10839	SLICER STUD	2	5
111	STD 1016-5-7S	DOWEL PIN	2	4
112	STD 1629-2	CABLE MOUNTS	4	4
113	STD 1000-08Z-5M	SCREW	4	4
114	11541	RELAY LABEL (240V)	2	4
115	11542	RELAY LABEL (110V)	5	4
116	11573	BASE GASKET	1	5
117	20722	SLICER ENCODER	1	5
118	STD 1002-10S-6	HEX HEAD SCREW	18	5
119	11398	LONG HOLD DOWN	2	3
120	11399	SHORT HOLD DOWN	2	5
121	STD 1721-1	PHONE JACK	1	3
122	STD 1210	COUNTER	1	4
123	STD 1000-8Z-10M	SCREW	2	4,5
124	20745	DRIVE MOTOR HALL EFFECT ASSY	1	4
125	STD 1020-08AS	NUT	2	4,5
126	11566	STRONGBACK INSERT	1	3
127	STD 1749	PLASTIC BEZEL	1	4
128	STD 1751	RIBBON CABLE	1	4
129	10353	COUNTER WINDOW	1	4

OPTIONAL ACCESSORIES		
PART NUMBER		DESCRIPTION
REG.	KEY'ED	
11309		1/4" CRINKLE CUT SLICER
11358	20708	5/16" STRAIGHT CUT SLICER
11364	20706	COTTAGE FRY SLICER
11370	20710	STEAK FRY SLICER
11376	20709	5/16" CRINKLE CUT SLICER
11422		STEAK FRY (5 WIRE) SLICER
11439	20711	ONION RING SLICER
11445	20707	3/8" STRAIGHT CUT SLICER
11492		DICE SLICER
11448	20705	HASH BROWN SLICER
11490	20726	TORTILLA SLICER
20567		CONVEYOR INSTALLATION KIT — LONG
20568		CONVEYOR INSTALLATION KIT — SHORT
20449		CONVEYOR HOLD DOWN KIT

REFERENCE DOCUMENTS	
PART NUMBER	DESCRIPTION
30129	550GT CONNECTION SCHEMATIC DIAGRAM
30114	WATER SYSTEM CONNECTION SCHEMATIC

NOTE:

1. ITEMS 27, 28, 71 & 73 TO BE INCLUDED IN SHIPPING CONTAINER ASSY., SEE DRAWINGS 20294 & 20295.
2. ON ITEM 111 USE ITEM 38 TO SECURE.
3. SECURE ITEM 117 WITH ITEM 5.

FIGURE 10-2A
MODEL 550GT ASSEMBLY DRAWING

10-13

Figure 10-2A MODEL 550GT ASSEMBLY DRAWING

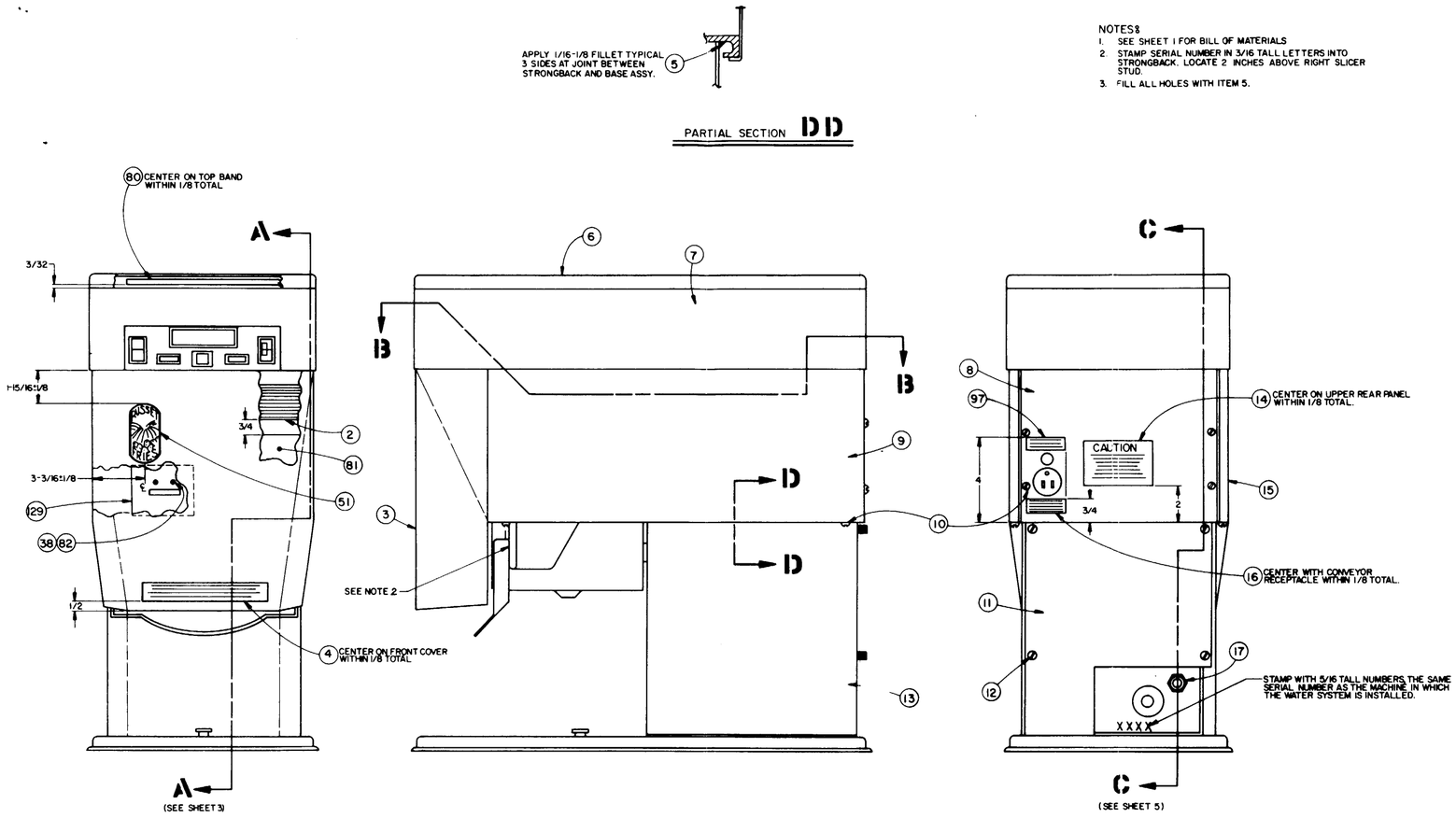
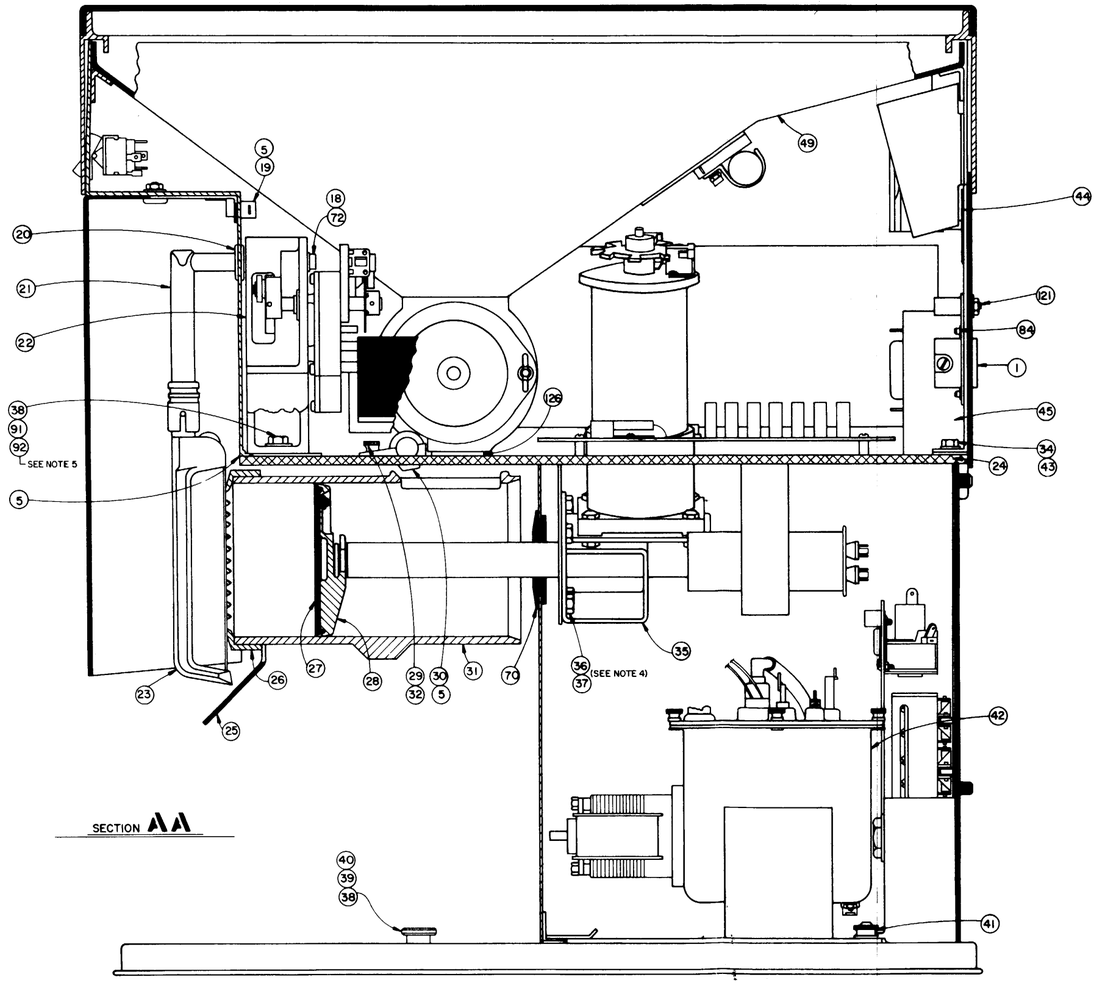


FIGURE 10-2B
MODEL 550GT ASSEMBLY DRAWING

Figure 10-2B MODEL 550GT ASSEMBLY DRAWING



NOTES:

1. SEE SHEET 1 FOR BILL OF MATERIAL.
2. REED SWITCH ASSY. ITEM 19 TO BE CENTERED SIDE TO SIDE ON REAR SURFACE OF FRONT PIECE WITHIN /.8" TOTAL. ENSURE SWITCH TERMINALS ARE ORIENTED AS ILLISTRATED.
3. APPLY MINIMUM FILLET OF ITEM 5 FULL WIDTH OF JOINT BETWEEN STRONGBACK AND FRONT PIECE.
4. TORQUE GEAR BOX MOUNTING NUTS 180 IN/LBS. MIN. & 216 IN/LBS. MAX.
5. USE FLAT WASHERS AS NEEDED.

FIGURE 10-2C
MODEL 550GT ASSEMBLY DRAWING

10-17

Figure 10-2C MODEL 550GT ASSEMBLY DRAWING

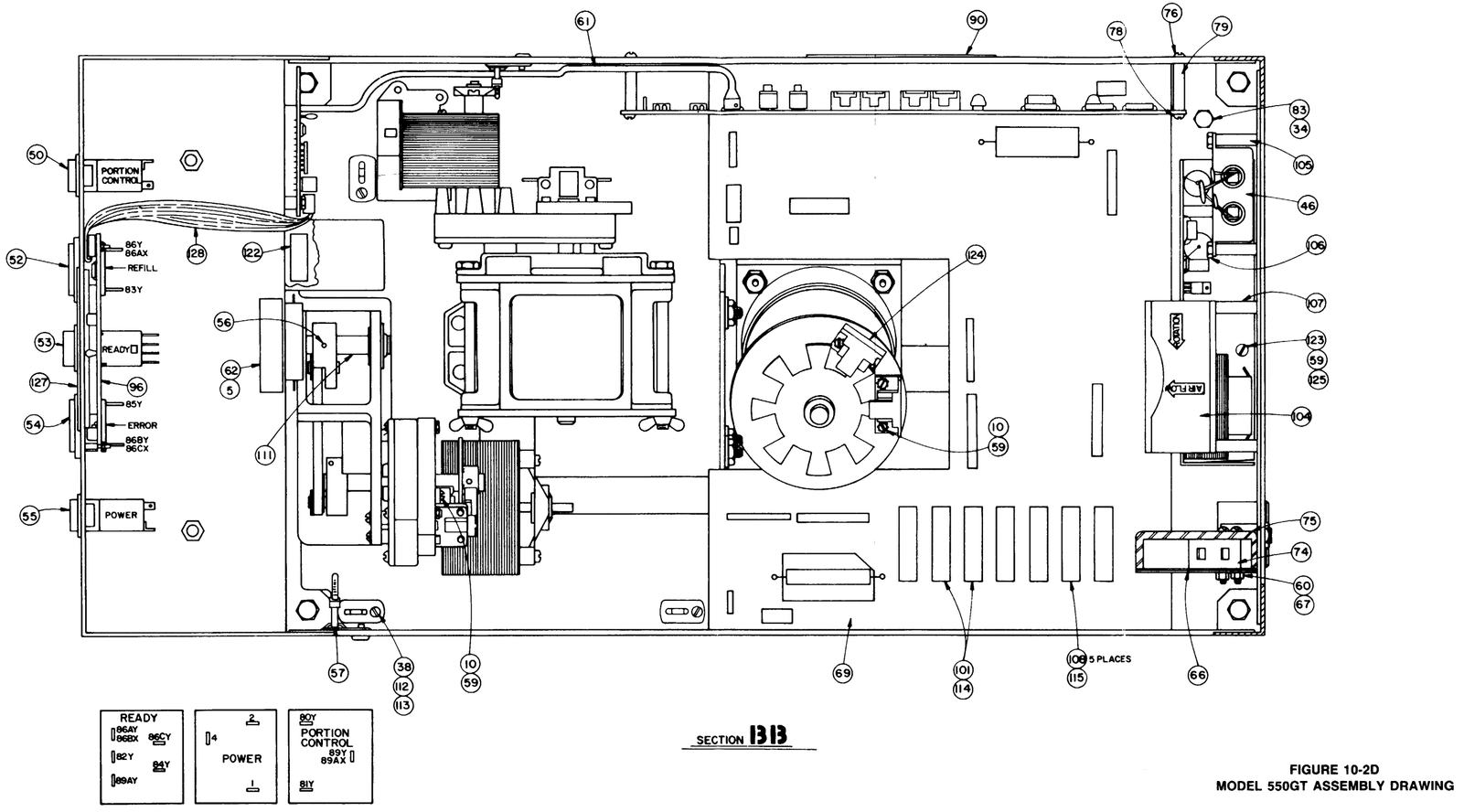


FIGURE 10-2D
MODEL 550GT ASSEMBLY DRAWING

Figure 10-2D MODEL 550GT ASSEMBLY DRAWING

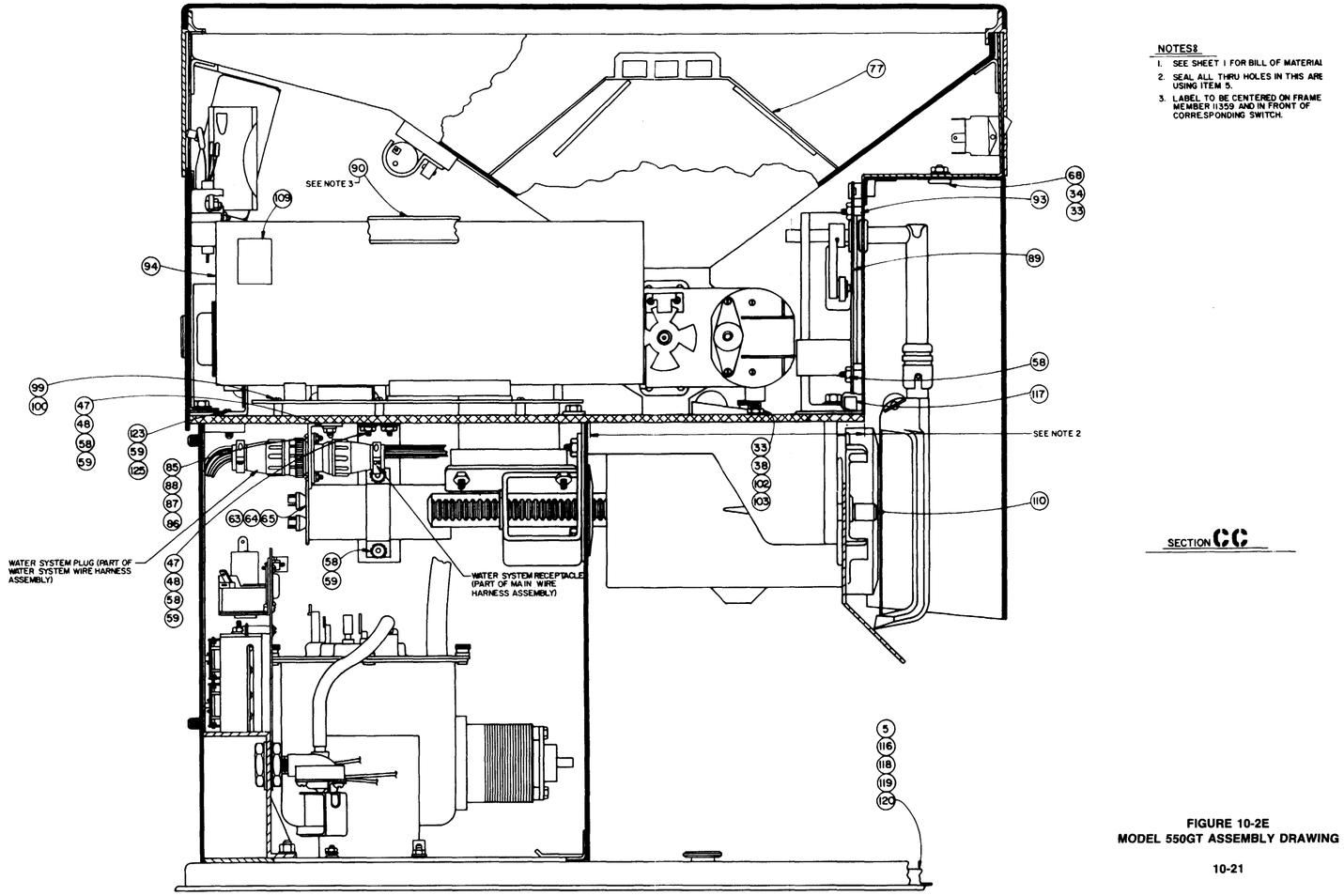


Figure 10-2E MODEL 550GT ASSEMBLY DRAWING

DRY PRODUCT SYSTEM ASSEMBLY

ITEM	QUANTITY	PART NO.	DESCRIPTION
1	1	20653	Sensor Disc
2	2	STD-1020-08A-Z	Nut
3	1	11464	Mounting Plate
4	1	STD-1020-10-A-Z	Nut
5	1	STD-1010-B-10RZ	Flat Washer
6	1	STD-1633-3	Proximity Switch Brace
7	1	20661	Proximity Switch Assembly (Part of Wiring Harness)
8	1	STD-1114-03-C	Cable Clamp
10	2	1004-8Z-18M	Screw
11	6	STD-1011-A-08	Lockwasher
12	4	STD-1000-08Z-6M	Screw
13	2	STD-1274-14	Wing Nut
14	As Req'd.	STD-1490-1	Vibra-tite
15	2	11007	Meter Hopper End
16	1	20247	Meter Rotor Assembly
17	1	20737	Product Hopper Assembly
18	1	10844	Meter Motor Mount
19	2	STD-1002-145-56	Screw
20	1	11505	Motor
21	2	STD-1011-A-06	Lockwasher
22	2	STD-1000-06Z-06M	Screw

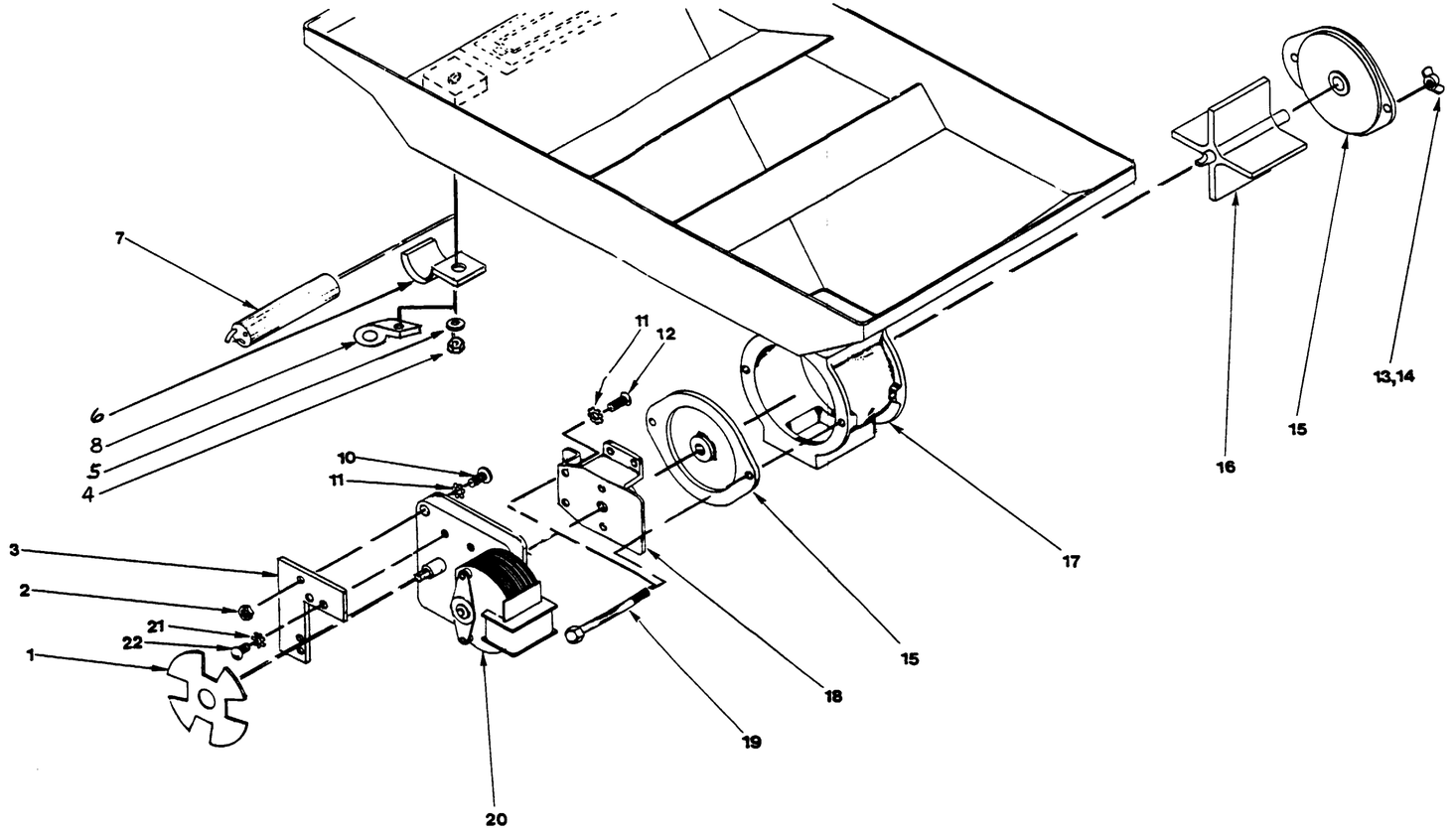


FIGURE 10-2F
MODEL 550GT — DRY PRODUCT SYSTEM

Figure 10-2F MODEL 550GT - DRY PRODUCT SYSTEM

1. ZERO ACTIVATED SWITCH
   CONDUCTING (0 VDC) AT REAR HARD STOP. TURNS OFF 2 MOTOR TURNS FORWARD OF REAR HARD STOP.

2. PRODUCT SYSTEM OPERATING SPECS.
   (IN COMPLETED MACHINE @ 120 VAC, 60 HZ) MOTOR ENERGIZED TIME — 3.50 SEC. MAX.

3. HIGH POT
   FINAL ASSEMBLED MACHINE WITH ALL INTERLOCK SWITCHES AND MAIN POWER SWITCH CLOSED MUST HAVE TEST POTENTIAL OF 1000 VAC, 60 HZ APPLIED BETWEEN LIVE METAL PARTS AND DEAD METAL PARTS FOR ONE MINUTE MINIMUM WITH BREAKDOWN.

4. CUTTER ACTIVATED SWITCH PINNING
   WITH CUTTER ARM TO LEFT OR RIGHT AT THE TURN AROUND POINT, CENTER TRAILING EDGE OF CUTTER VANE IN THE HALL EFFECT SWITCH AND PIN.

5. PRODUCT METERING VANE ACTIVATED SWITCH PINNING
   TIMED IN ASSEMBLED PRODUCT HOPPER. POSITION METERING VANE WITH FULL FLIGHT OPEN. CENTER LEADING EDGE OF VANE IN HALL EFFECT SWITCH AND PIN.

6. WATER SYSTEM SET POINTS
   (3 SHOT AVERAGE UNDER RAPID FIRE CONDITION WITH COLD INLET WATER.)

   TOTAL VOLUME — 432 ± 3 GRAMS
   FILL TIME — 18 ± 4 SECONDS @ 432 ± 3 GRAMS
   PUMP ENERGIZED TIME — 2.6 ± 0.3 SECONDS
   (TOTAL OF PREWATER AND FINAL WATER)

7. SERIALIZATION
   THE SERIAL NUMBER APPLIED TO EACH RUSSET FRIES DISPENSER ON THE NAMEPLATE IS A FOUR DIGIT NUMBER WHICH PROGRESSES ONE NUMBER WITH EACH RUSSET FRIES DISPENSER STARTING WITH NO. 7000.

   EXAMPLE:

   SERIAL NO. 7040
   └—ORDER OF ASSEMBLY

8. TOTAL NOZZLE DISCHARGE VOLUME DISTRIBUTION LEFT TO RIGHT WHEN INSTALLED IN F/M
   STREAM VOLUMES MUST BE WITHIN 20 ML OF EACH OTHER.
   CENTER STREAM VOLUME — 75 ML TO 100 ML.

FIGURE 10-3
MODEL 550GT CALIBRATION SPECIFICATIONS

Figure 10-3 MODEL 550GT CALIBRATION SPECIFICATIONS

PARTS LIST FOR MODEL 550GT-NSU WATER SYSTEM ASSEMBLY

ITEM	QUANTITY	PART NO.	DESCRIPTION
1	1	STD-1673-4	Grommet
2	3	STD-1114-07N	Cable Clamp
3	4	STD-1010-A06-RZ	Washer
4	9	STD-1020-06-AZ	Nut
5	2	STD-1000-6Z-8M	Screw
6	1	STD-1753	Mercury Relay
7	1	11374	Label
8	1	11375	Label
9	2	STD-1603-2	Switch
11	8	STD-1011-A-Z-08	Lockwasher
12	2	STD-1020-08-A-Z	Nut
13	2	STD-1010-A-08-RZ	Washer
14	1	STD-1114-04-N	Cable Clamp
15	1	STD-1463	Solonoid Valve
16	As Req'd.	STD-1156	Adhesive
17	1	STD-5058-1/4-220-10	Resistor
18	1	STD-1743-06P-12	Thread Spacer
19	1	STD-1742-2	Solder Lug
21	1	STD-1464	Plastic Elbow
22	1	STD-5109	Insulator
23	1	STD-1752	Transistor
24	As Req'd.	STD-1575	Heat Sink
26	1	20495	Base
27	2	STD-1113-4T	Cable Tie
28	2	STD-1001-14Z-8M	Screw
29	2	STD-1020-14-A-Z	Nut
30	2	STD-1011-A-S-14	Lockwasher
31	1	20673	Water Heater Assembly
32	3	STD-1001-08Z-6M	Screw
33	2	STD-1638-06Z-54	Threaded Rod
34	4	STD-1011-A-06	Lockwasher
35	7	STD-1000-6Z-6M	Screw
36	1	11397	Wiring Label
37	2	STD-1000-6Z-4N	Screw
38	1	20602	Switch Cover
39	1	11553	GT Utility Inlet Box
40	2	STD-1402	Thread Forming Screw
41	1	STD-1465-8	Tubing
42	2	STD-1004-4Z-6M	Screw
43	2	STD-1021-04	Nut
44	1	STD-5053	Socket
45	1	20718	GT-N Wire Harness (Not Shown)
46	1	STD-1658	Handy Box Cover
47	1	STD-1682-6	Wire Clamp
48	1	STD-1682-7	90° Conduit Elbow
49	1	STD-1656	Conduit Nipple
50	1	STD-5245-1/2	Nut
51	1	STD-1657	Handy Box Extension

PARTS LIST FOR MODEL 550GT-NSU WATER SYSTEM ASSEMBLY -

Continued

ITEM	QUANTITY	PART NO.	DESCRIPTION
52	1	11551	Relay Bracket

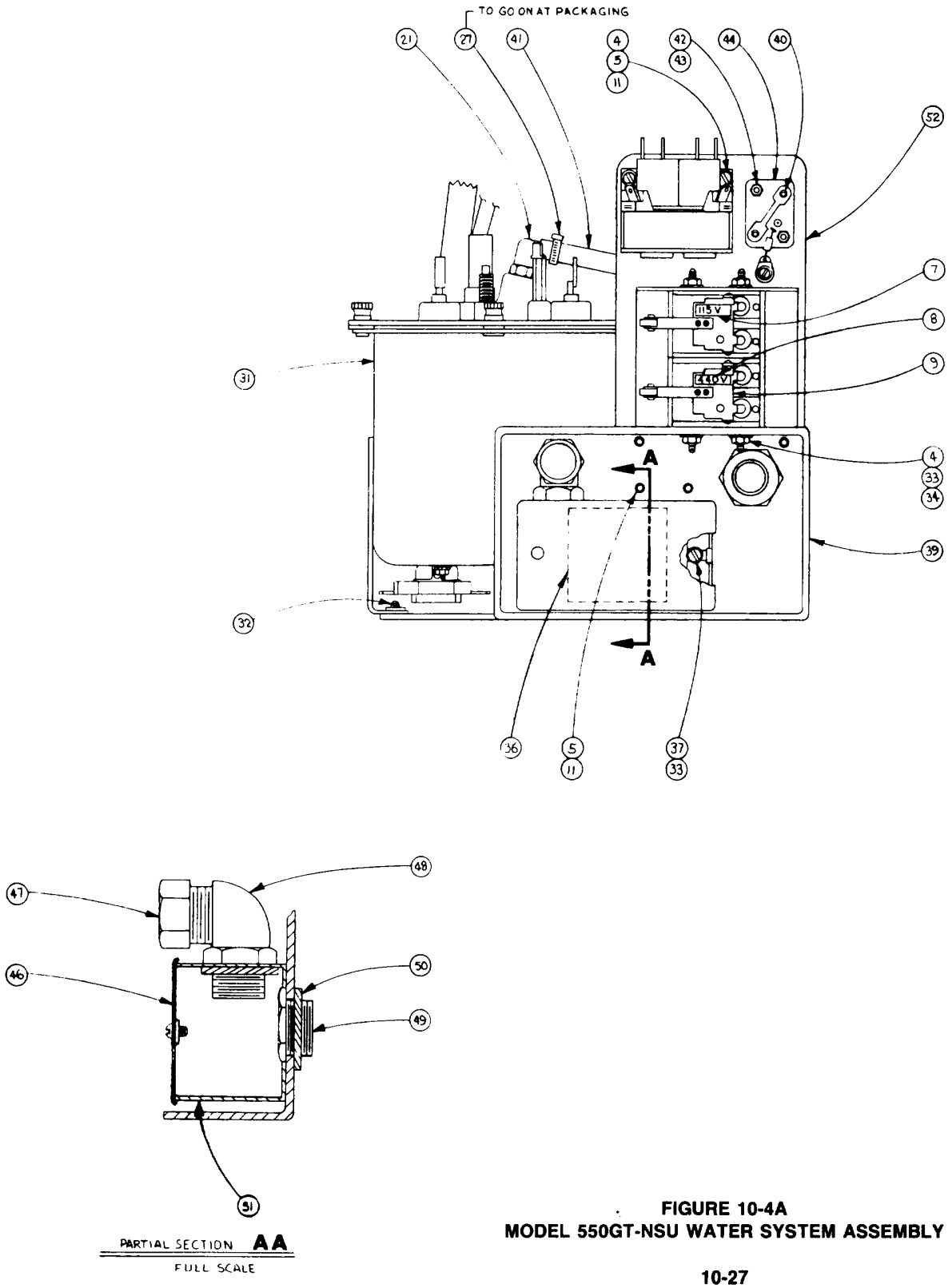


FIGURE 10-4A
MODEL 550GT-NSU WATER SYSTEM ASSEMBLY

10-27

Figure 10-4A MODEL 550GT-NSU WATER SYSTEM ASSEMBLY

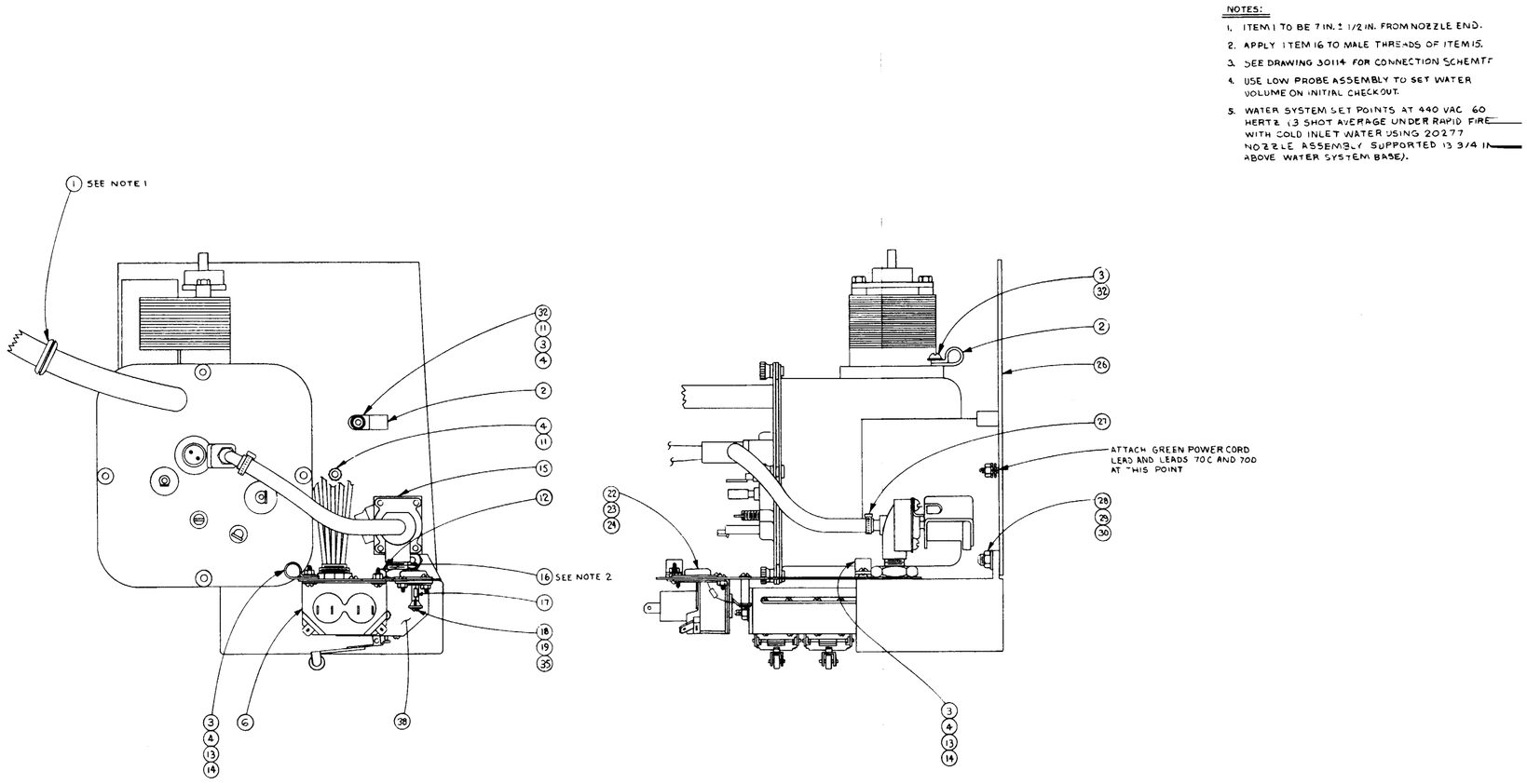
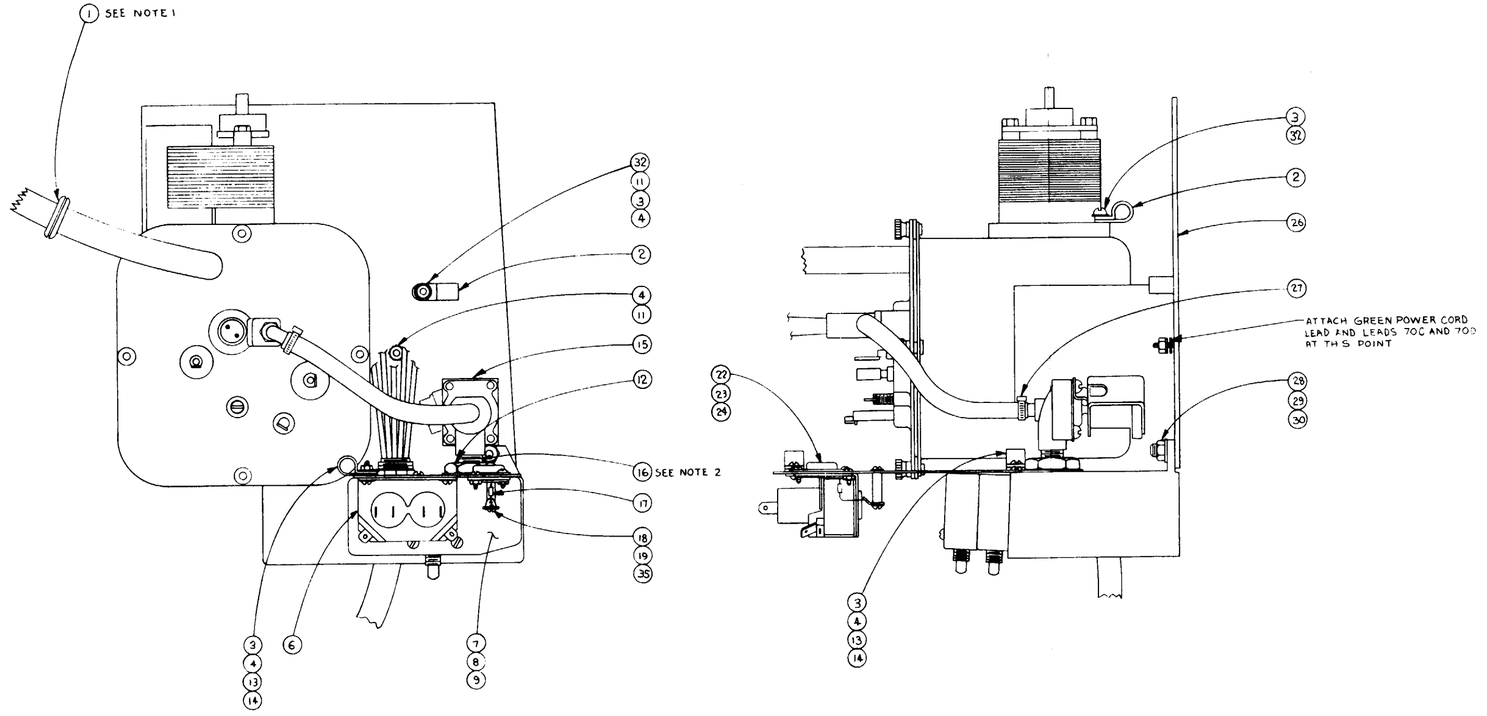


FIGURE 10-4B
MODEL 550GT-NSU WATER SYSTEM ASSEMBLY

Figure 10-4B MODEL 550GT-NSU WATER SYSTEM ASSEMBLY

PARTS LIST FOR MODEL 550GT-S WATER SYSTEM ASSEMBLY

ITEM	QUANTITY	PART NO.	DESCRIPTION
1	1	STD-1673-4	Grommet
2	3	STD-1114-07N	Cable Clamp
3	4	STD-1010-A06-RZ	Washer
4	7	STD-1020-06-AZ	Nut
5	2	STD-1000-6Z-8M	Screw
6	1	STD-1753	Mercury Relay
7	1	110702	Insulation
8	2	STD-1224-2	Switch
9	2	10701	Switch Cover
11	3	STD-1011-A-Z-08	Lockwasher
12	2	STD-1020-08-A-Z	Nut
13	2	STD-1010-A08-RZ	Washer
14	1	STD-1114-04-N	Cable Clamp
15	1	STD-1463	Solonoid Valve
16	As Req'd.	STD-1156	Adhesive
17	1	STD-5058-1/4-220-10	Resistor
18	1	STD-1743-06P-12	Thread Spacer
19	1	STD-1742-2	Solder Lug
21	1	STD-1466	Plastic Elbow
22	1	STD-5109	Insulator
23	1	STD-5127-3791	Transistor
24	As Req'd.	STD-1575	Heat Sink
26	1	20495	Base
27	2	STD-1113-4T	Cable Tie
28	2	STD-1001-14Z-8M	Screw
29	2	STD-1020-14-A-Z	Nut
30	2	STD-1011-A-S-14	Lockwasher
31	1	20673	Water Heater Assembly
32	3	STD-1001-08Z-6M	Screw
33	2	STD-1000-06Z-30M	Screw
34	2	STD-1000-06-C-Z	Nut
35	7	STD-1000-6Z-6M	Screw
36	1	STD-1682-1	Cable Connector
37	2	STD-1682-2	Cable Connector
38	1	20719	5-wire Plug and Cord Assembly
39	1	11553	GT Utility Inlet Box
40	2	STD-1402	Thread Forming Screw
41	1	STD-1465-8	Tubing
42	2	STD-1004-6Z-6M	Screw
43	2	STD-1021-04	Nut
44	1	STD-5053	Socket
45	1	20716	GT-S Wire Harness (Not Shown)
46	1	11551	Relay Bracket



(SEE SHEET 2 FOR PART LIST AND NOTES)

FIGURE 10-5A
MODEL 550GT-S WATER SYSTEM ASSEMBLY

Figure 10-5A MODEL 550GT-S WATER SYSTEM ASSEMBLY

NOTES:

1. ITEM 1 TO BE 7 IN. ± 1/2 IN. FROM NOZZLE END.
2. APPLY ITEM 16 TO MALE THREADS OF ITEM 15.
3. SEE DRAWING 30113 FOR CONNECTION SCHEMATIC.
4. UNSTRIPPED OUTER SHEATH OF ITEM 38 MUST PROTRUDE INSIDE ITEM 39 1/2 ± 1/4.
5. USE LOW PROBE ASSEMBLY TO SET WATER VOLUME ON INITIAL CHECKOUT.
6. WATER SYSTEM SET POINTS AT 208 VAC 60 HZ. (3 SHOT AVERAGE UNDER RAPID FIRE CONDITION WITH COLD INLET WATER USING 20277 NOZZLE ASSEMBLY SUPPORTED AT 13 3/4 ABOVE WATER SYSTEM BASE).

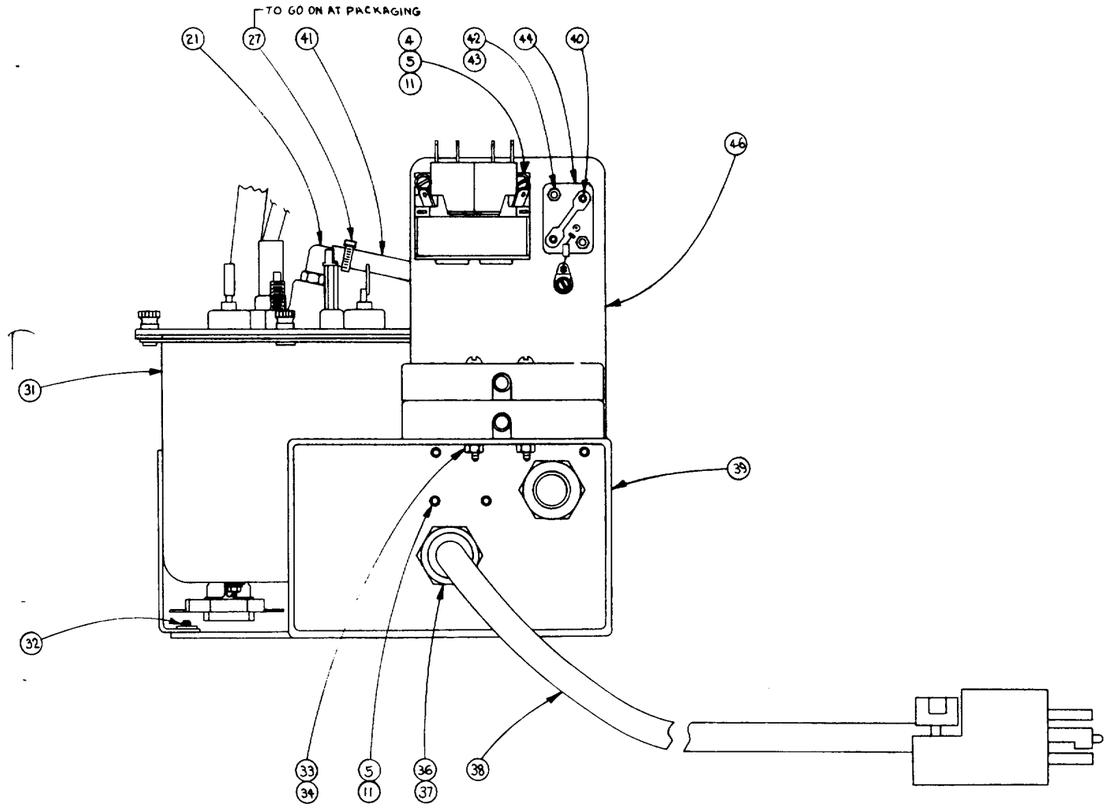


FIGURE 10-5B
MODEL 550GT-S WATER SYSTEM ASSEMBLY

Figure 10-5B MODEL 550GT-S WATER SYSTEM ASSEMBLY

CUTTER SUPPORT ASSEMBLY

ITEM	QUANTITY	PART NO.	DESCRIPTION
1	1	20288	Eccentric Assembly
2	As Req'd.	STD-1150	Loctite
3	3	STD-1081	Flanged Bearing
4	1	20507	Eccentric Linkage Assembly
5	1	20062	Eccentric Actuator Arm
6	2	STD-1022-3C	Retaining Ring
7	2	STD-1000-08Z-16M	Screw
8	1	11464	Sensor Mounting Plate
9	1	11466	Motor
10	1	11465	Cutter Support Casting
11	2	STD-1012-08Z-A	Lockwasher
12	5	STD-1000-08Z-7M	Screw
13	1	STD-1015-4C-20	Spring Pin
14	5	STD-1010B-08-RZ	Washer
15	5	STD-1010A-08-RZ	Washer
16	2	STD-1020-08Z-A	Nut
17	1	11598	Cutter Support Bushing

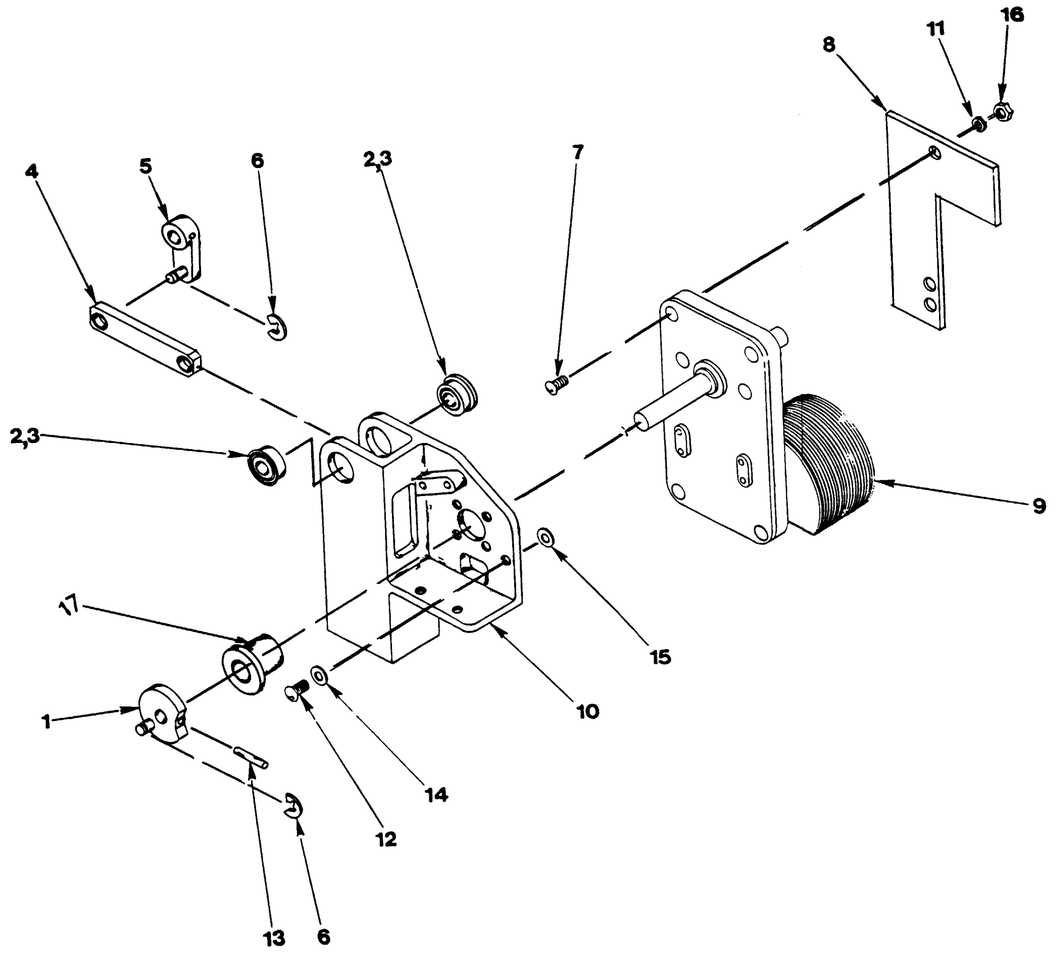


FIGURE 10-6
MODEL 550GT CUTTER SUPPORT ASSEMBLY

Figure 10-6 MODEL 550GT CUTTER SUPPORT ASSEMBLY

CHAPTER 11

TROUBLESHOOTING

Troubleshooting, as the term implies, refers to finding and repairing malfunctions. What is not implied and must be developed is a logical, systematic approach to finding and repairing these malfunctions. Each individual eventually develops a particular style as he gains experience in finding problems. The difference between a troubleshooter and a parts changer is how quickly and efficiently the problem is pinpointed and remedied. Including the following basic steps in your troubleshooting procedure, enables you to develop a good system for handling problems:

1. Acquire a complete understanding of how the system works when it is operating normally.
2. Develop an understanding of the service literature (manuals, bulletins, etc.) and know how to use a volt-ohmmeter to gather information from the malfunctioning equipment.
3. Learn to correctly interpret and analyze the information gathered from the malfunctioning equipment.
4. Isolate problems in a logical and systematic manner.
5. Replace only the damaged component by using the proper tools and doing so in an efficient manner.
6. Finally, check the system out to be sure your repair has been complete and effective.

The troubleshooting guide which follows has been divided into two categories. Category 1 refers to error codes as displayed on the diagnostic display when the error light is lit. Category 2 refers to malfunctions by symptoms.

Turn the power on and watch the machine step through the different states of operation. When a deviation from normal state occurs, refer to the fault number for further definition. The alphanumeric display will define the fault.

TOLL FREE SERVICE NUMBER 1-800-826-3529

CATEGORY 1 ERROR CODES

DIAGNOSTIC DISPLAY	PROBABLE CAUSES
No main drive reverse	Input Signal Error a. Main drive motor activated switch b. Zero switch Output Signal Error a. DMR solid state relay Component Error a. Main drive motor b. Drive motor capacitor Main P.C.B.
No main drive forward	Input Signal Error a. Main drive motor activated switch Output Signal Error a. DMF solid state relay Component Error a. Main drive motor b. Drive motor capacitor Main P.C.B.

CATEGORY 1 ERROR CODES - Continued

DIAGNOSTIC DISPLAY	PROBABLE CAUSES
Bad product system	Input Signal Error a. Product motor activated switch Output Signal Error a. Product solid state relay Mechanical a. Stuck metering vane Component Error a. Product motor Main P.C.B.
No fill water	Water turned off Input Signal Error a. High probe (tank would overfill) Output Signal Error a. Fill solid state relay Component Error a. Fill solonoid Main P.C.B.
Not pumping	Input Signal Error a. Low probe Output Signal Error a. Pump relay Component Error a. Pump motor Main P.C.B.
Not heating	Input Signal Error a. Thermostat (water would be boiling or water high limit would be tripped) Output Signal Error a. Water heater relay Component Error a. Water heater Main P.C.B.
No front cover	a. No front cover b. No front magnet c. Front cover interlock switch d. Main P.C.B.
Not cutting	Input Signal Error a. Cutter motor actuated switch Output Signal Error a. CUT solid state relay Mechanical a. Cutter jammed Component Error a. Cutter motor Main P.C.B.

CATEGORY 2 MALFUNCTIONS

SYMPTOMS	PROBABLE CAUSES
1. No power	a. Machine not plugged in. b. Top or bottom interlock switch not energized. c. Water system electric plug (P-10) not plugged in. d. Circuit breaker tripped (in-house wiring). e. Faulty main power switch.
2. No display	
a. Nothing happens when turned on	a. Faulty AC/DC power supply. b. Main P.C.B.
b. Machine reaches STATE 2 (Waiting to dispense)	a. Faulty board inter-connect cable. b. Faulty main P.C.B. c. Faulty display P.C.B.
3. Improper display or flashing display and front panel lights	a. Display P.C.B. b. Main P.C.B. c. Interconnect cable.
4. No ready light	See error code. a. Light bulb b. Display P.C.B.
5. Incorrect fry size	a. Improper setup (setting will change only in STATE 2). b. Display P.C.B.
6. Incorrect portion size	a. Improper setup (setting will change only in STATE 2). b. Display P.C.B.
7. Incorrect portion control	a. Improper setup (large or regular dispense will change only in STATE 2). b. Portion control switch. c. Display P.C.B.
8. No dispense when ready button pushed	a. Ready button b. Display P.C.B.
9. No adjustable pause or incorrect adjustable pause	a. Main P.C.B.
10. No buzzer	a. Buzzer not plugged in. b. Bad remote buzzer. c. Buzzer plug. d. Main P.C.B.
11. No conveyor	a. Conveyor not plugged in. b. Bad remote conveyor. c. Conveyor plug. d. Main P.C.B.
12. No refill light	a. Light bulb burned out. b. Display P.C.B. c. Low product sensor or adjustment. d. Sensor plate. e. Main P.C.B.
13. No error light	a. Light bulb burned out. b. Display P.C.B.
14. Always a refill light	a. Low product sensor or adjustment. b. Sensor plate. c. Product system connector. d. Main P.C.B. e. Display P.C.B.

CATEGORY 2 MALFUNCTIONS - Continued

SYMPTOMS	PROBABLE CAUSES
15. Water not hot	Wait, if a problem exists, the water heater timer will time out. Display will read ″Not Heating″.
16. Water system not full	Wait, if a problem exists, the water fill timer will time out. Display will read ″No Fill Water″.

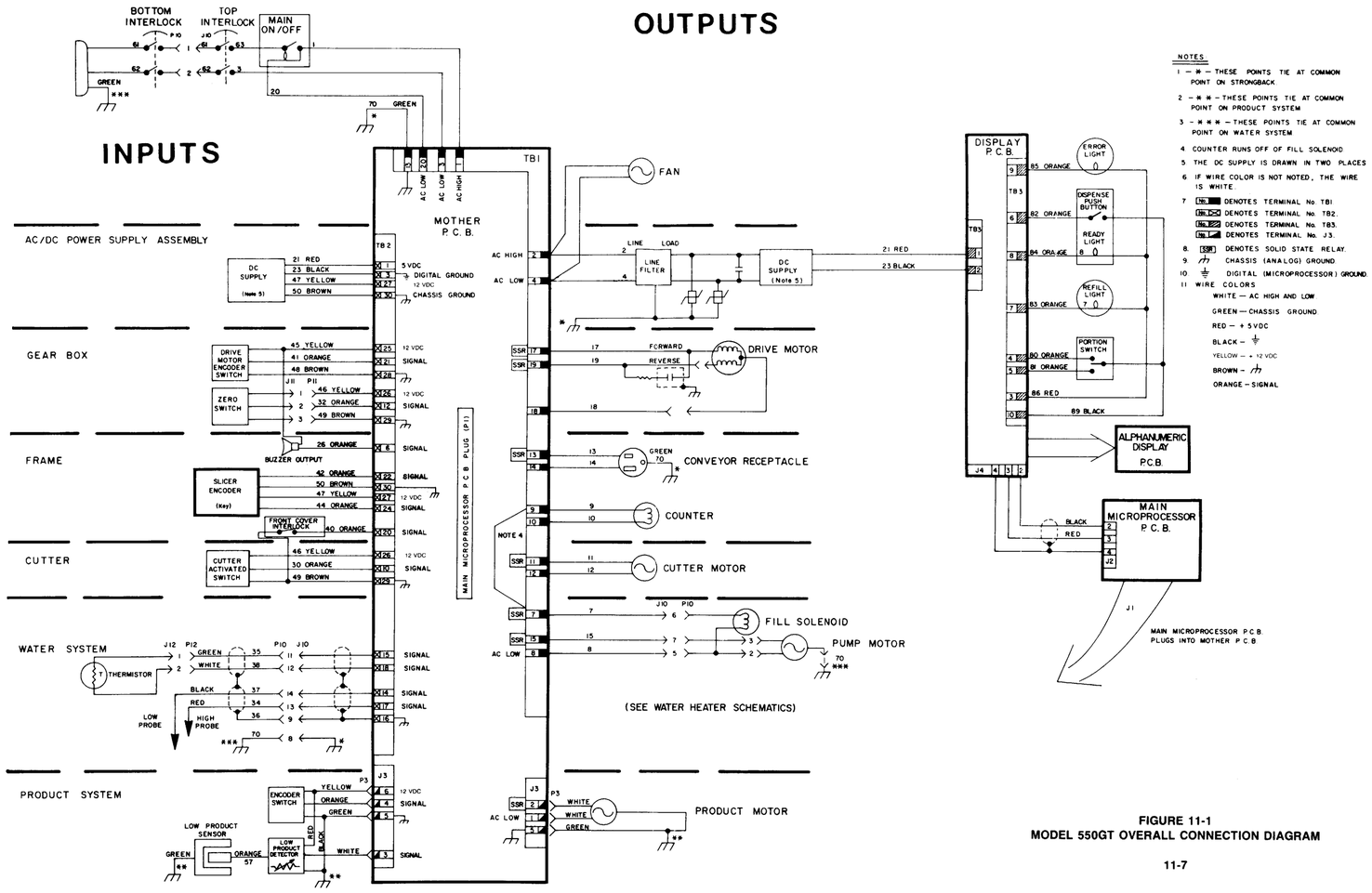


FIGURE 11-1
MODEL 550GT OVERALL CONNECTION DIAGRAM

11-7

Figure 11-1 MODEL 550GT OVERALL CONNECTION DIAGRAM

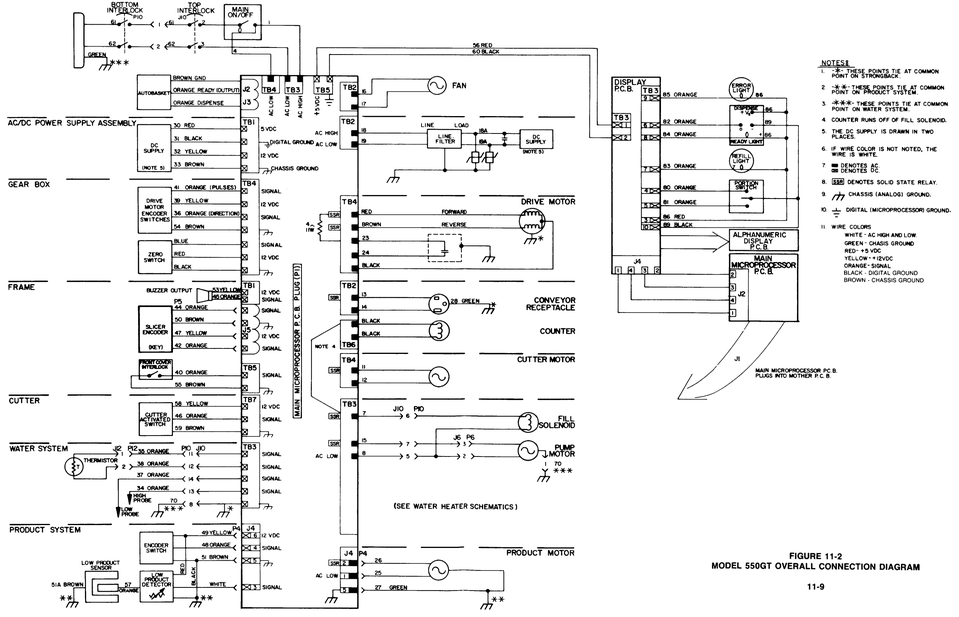


FIGURE 11-2
MODEL 550GT OVERALL CONNECTION DIAGRAM

11-9

Figure 11-2 MODEL 550GT OVERALL CONNECTION DIAGRAM

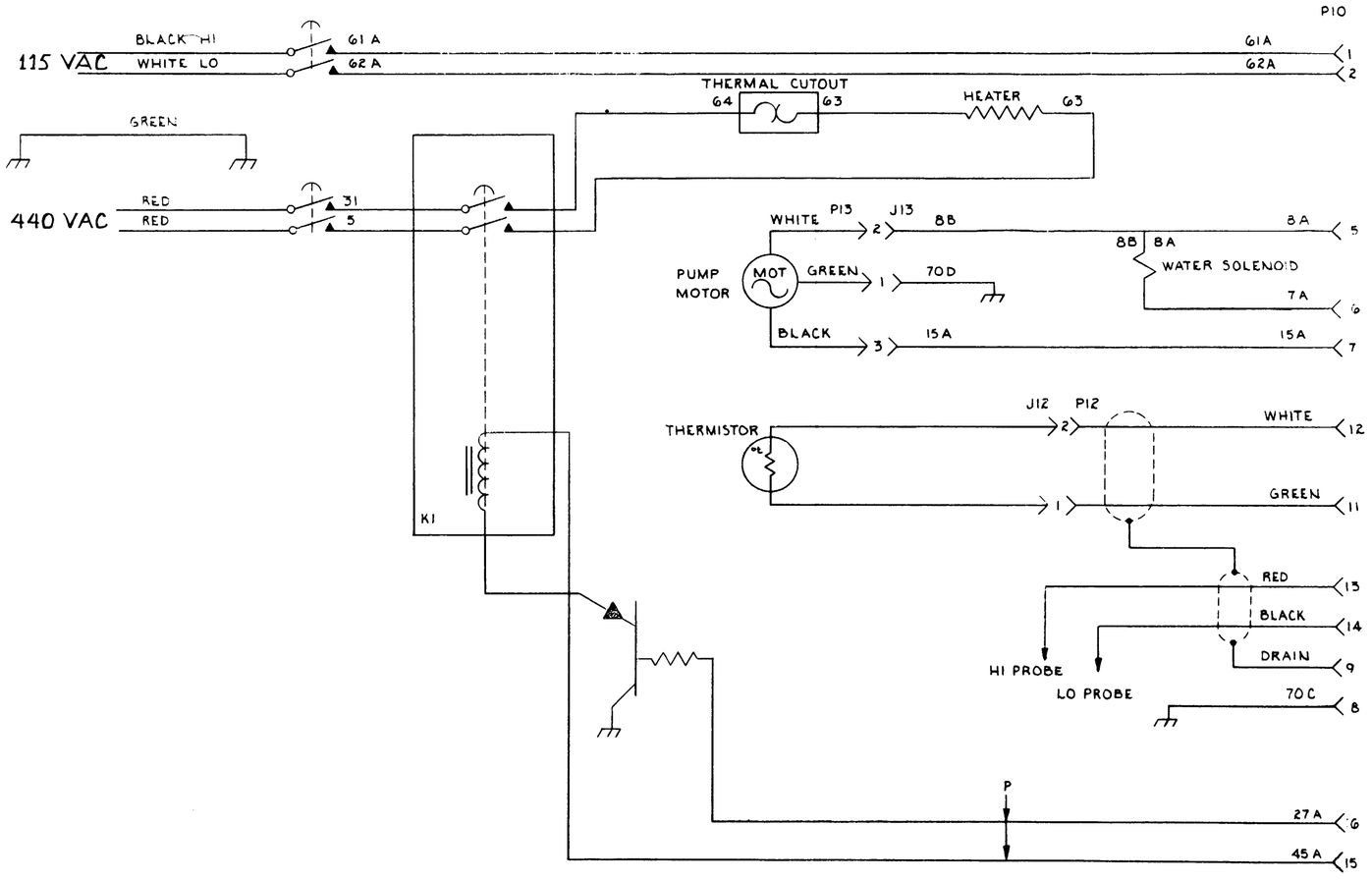


FIGURE 11-3
SCHEMATIC 550NSU WATER SYSTEM

Figure 11-3 SCHEMATIC 550NSU WATER SYSTEM

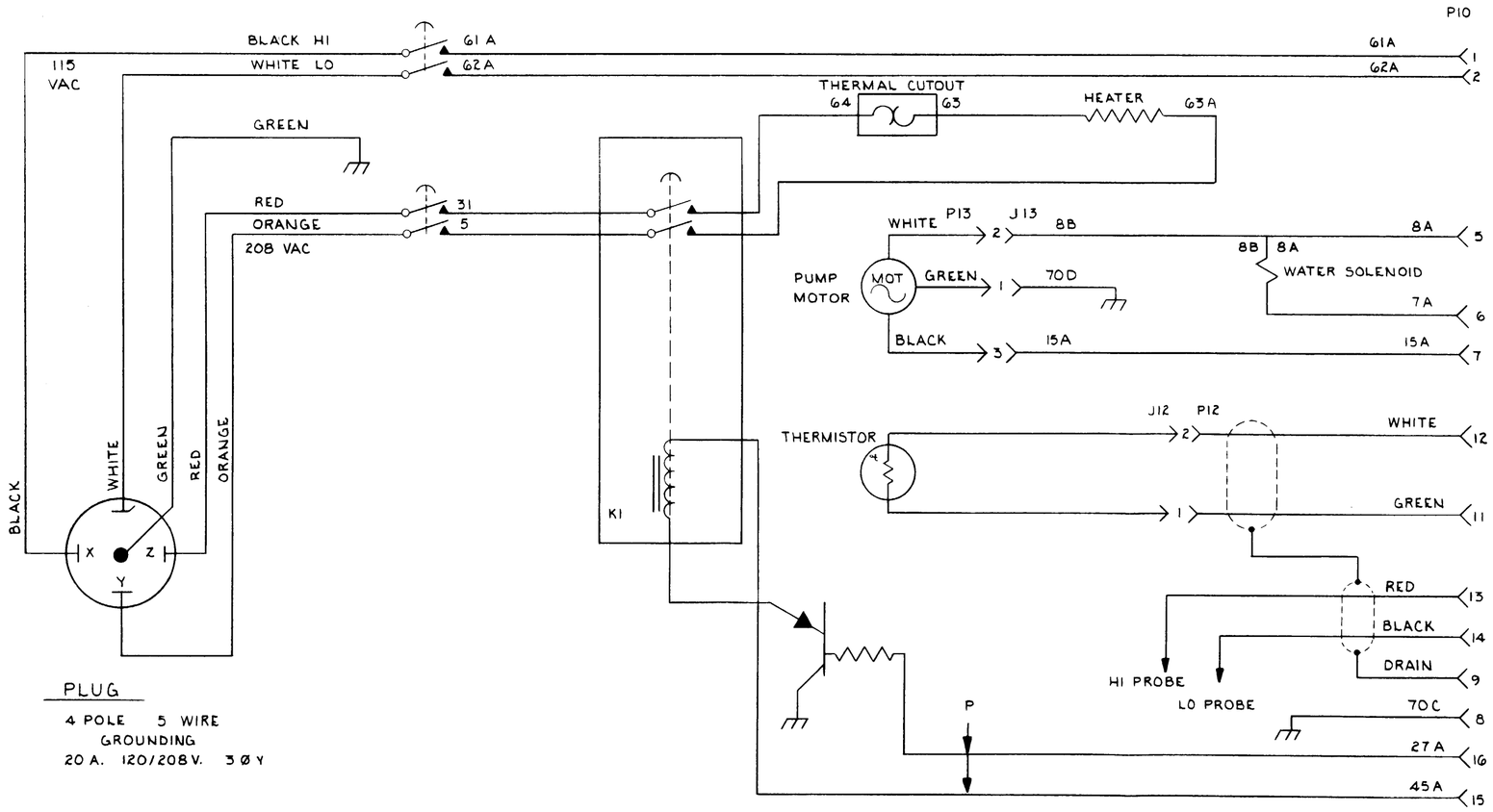


FIGURE 11-4
SCHEMATIC 550S WATER SYSTEM

Figure 11-4 SCHEMATIC 550S WATER SYSTEM

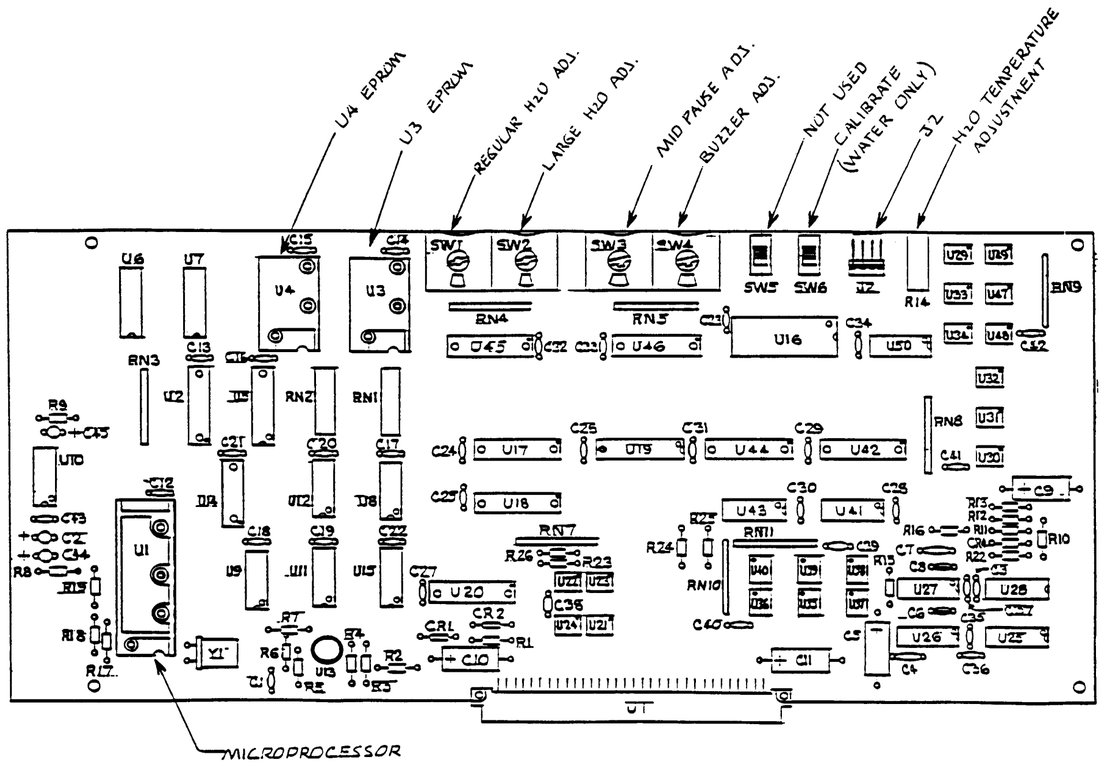


FIGURE 11-5
MAIN MICROPROCESSOR BOARD

Figure 11-5 MAIN MICROPROCESSOR BOARD

CHAPTER 12

MODEL 550A - 550GT OPTIONAL ACCESSORIES

MODEL 550-A THROUGH 550-GT OPTIONAL ACCESSORIES

DESCRIPTION	RUSSET FRIES DESPENSER PART NUMBER	NAT'L STOCK NUMBER
Russet Fries Dispenser Machine Shore Galley Use	550GTS	7320-01-168-1597
Russet Fries Dispenser Machine Navy Ship Board Use	550GTNSU	7320-01-167-7587
Dices Slicer	11492	7320-01-167-7588
Onion Ring Slicer	20711	7320-01-167-7589
Steak Slicer	20710	7320-01-167-7590
5/16″ Crinkle Slicer	20709	7320-01-167-7644
5/16″ Straight Slicer	20708	7320-01-167-7645
1/4″ Crinkle Slicer	11309	7320-01-167-7646
1/4″ Straight Slicer*	11301	7320-01-136-9814
Cottage Fry Slicer	20706	7320-01-168-1595
Hashbrown Slicer	20705	7320-01-168-1596
Shoestring 3/16″	20707	7320-01-167-7647
* - A 1/4″ straight cut slicer is furnished standard with all machines.		
Other accessory items optionally available for the Model 550GT are:		
Hopper Extension	10327	
Conveyor, Installation Kit, Long (19″)	20567	
Conveyor, Installation Kit, Short (13″)	20568	
Door Interlock Switch Bypass (Magnet)	STD-1211	
	Conveyor, Hold Down 20449	
Audio Indicator (Timer Buzzer)	20691	
Manual-Model 550A and GT	20578	

CONVEYOR D-1A

ITEM	PART NO.	QUANTITY SHORT	QUANTITY LONG	DESCRIPTION
1	11162	2	0	Side Plate-Short
2	11163	0	2	Side Plate-Long
3	STD-1002-14S-16	6	6	Screw
4	11160	2	2	Head Shaft
5	11164	1	1	Stay rod
6	11239	1	1	Idler
7	11238	1	1	Idler Shaft
8	STD-1423	2	2	Bushing
9	11167	2	2	Guide Roll
10	STD-1005-10A-6-1	2	2	Set Screw
11	11166	1	1	Tail Shaft
12	STD-1424	1	1	Motor
13	11232	1	1	Crumb Catcher

CONVEYOR D-1A - Continued

ITEM	PART NO.	QUANTITY SHORT	QUANTITY LONG	DESCRIPTION
14	11244	1	1	Crumb Catcher Grommet
15	STD-1021-10-S-P	1	1	Nut
16	STD-1010A-10RS	1	1	Flat Washer
17	STD-1114-04-C	1	1	Cable Clamp
18	STD-1001-10S-6N	1	1	Screw
19	STD-1005-10A-4-1	1	1	Set Screw
20	11169	1	1	Drive Gear
21	20389	1	1	Conveyor Base Assembly
22	STD-1012-10S-A	4	4	Lockwasher
23	STD-1002-50S-6	4	4	Screw
24	STD-1319-10-S-	2	2	Acorn Nut
25	10997	2	2	Conveyor Warning Label
26	10971	1	1	Conveyor Nameplate
27	11161	1	1	Support Rod
28	STD-1270	As Reqd.	As Reqd.	Wire Belt
29	STD-1249	As Reqd.	As Reqd.	Sealant
30	STD-1410	As Reqd.	As Reqd.	Weatherstrip Cement

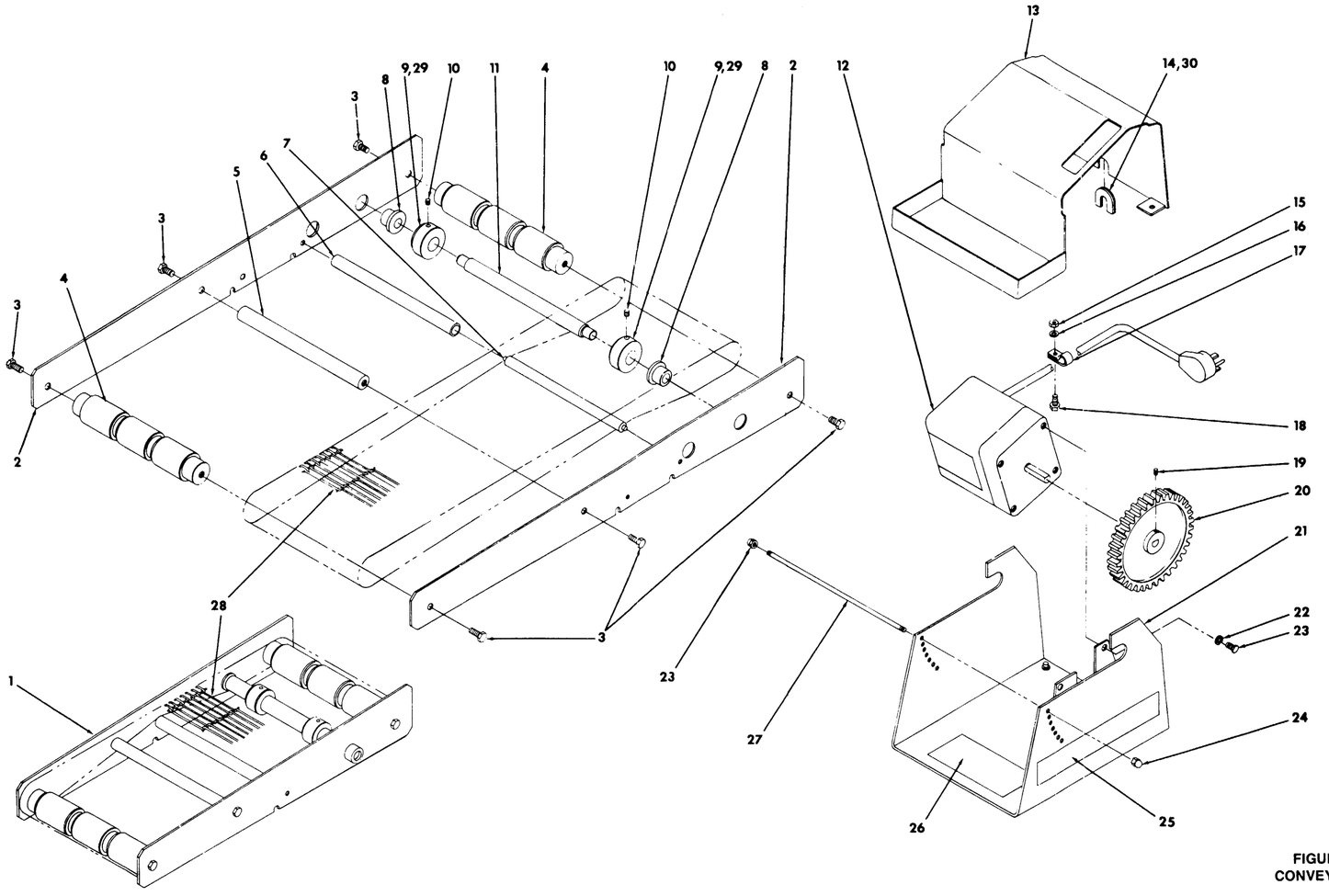


FIGURE 12-1
CONVEYOR D-1 A

Figure 12-1 CONVEYOR D-1 A